



## **FISHERIES ASSESSMENT FOR FEASIBILITY OF SPATIAL MANAGEMENT OF TWO MAJOR COMMERCIAL FISHING GEARS WITHIN THE PROPOSED TUN MUSTAPHA PARK**



March 2011

This publication was prepared by B.M. Manjaji-Matsumoto and Rebecca Jumin (WWF-Malaysia) with partial funding from the United States Agency for International Development's Coral Triangle Support Partnership (CTSP)





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# Fisheries Assessment for Feasibility of Spatial Management of Two Major Commercial Fishing Gears within the proposed Tun Mustapha Park

**March 2011**

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**Prepared by:** B.M. Manjaji-Matsumoto and Rebecca Jumin (WWF-Malaysia) with partial funding from the United States Agency for International Development's Coral Triangle Support Partnership (CTSP).

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Front cover photo: Live reef fish in a fish cage in Kudat, Sabah. © WWF-Malaysia/Rebecca Jumin

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Mr. Johnny Wong (Secretary, PPKNK);  
Mr. Voon Tien Yen (Trawler owner, Kudat);  
Mr. Lu Kon Hee (Trawler owner, Kudat);  
Mr. Steven Kwek (Widegrowth Sdn. Bhd., Sandakan);  
Mr. Chuan (Hai Leng Enterprise, Sandakan); and  
Mr. Phua (Chairman, Sandakan Fisheries Association).

The two Project research assistants were Ong Jay Jim (Sandakan-based) and Esterwatti D. Jeuni (Kudat-based).

## EXECUTIVE SUMMARY

Kudat and Sandakan are the major fish landing ports within the East Coast Fishing Zone (ECFZ). Important fishing grounds for Kudat-based fishing boats are concentrated around Banggi-Balambangan islands, Banggi-Kudat area, and Malawali-Mandi Darah islands. Prawn trawlers also fish in the Marudu Bay. As for Sandakan-based fishing boats, important trawling grounds are Labuk Bay, while purse seining grounds are the Dent Peninsula. Fishing efforts of trawlers ranged from 1-6 days per fishing trip and 6-7 hours of trawling per day. Fishing efforts of purse seiners ranged from 5-11 hours of fishing per day, except during the full moon period when fishing activities are stopped. Latest (2008) fisheries statistics indicate the annual catches of Kudat to be approximately 7,000 mt and Sandakan at approximately 10,000 mt. The catch trend analyses for both trawlers and purse seiners for the period 1995-2008 of four districts (Beluran, Sandakan, Kota Marudu and Kudat) within the ECFZ are presented. For both types of commercial fishing, the data indicates the importance of Kudat and Sandakan as the major fish landing ports within the ECFZ. The latest (2007 data) Kudat trawl landings were 4,807 mt, a drastic reduction from over 20,000 mt in 1999. Whereas for Sandakan, the latest (2007 data) trawl landings was 10,658 mt, a moderate increase from 8,489 mt in 1999. As for purse seine landings, Kudat catches showed an initial 'recovery' after an initial reduction (to 5,764 mt in 2007) since 1997, but again decreased (from 8,284 mt in 2006) beginning 2007. As for Sandakan, the annual purse seine catches averaged at around 2,000 mt annually for the same period, with signs of decrease beginning 2005.

While current fishing rights are regulated through issuance of fishing licences, however, there are loopholes affecting the accuracy of catch and landing reports by the licensees. The real reasons for the reduced trawl catch for Kudat and Sandakan thus remains to be known, although in Kudat conversion from trawling to purse seining activities had been reported. The regulation of the fishing activities and operations at best can be described as weak. These and other issues of concern in establishing spatial management for fisheries within the proposed Tun Mustapha Park are presented in Chapter 6 and 7.

The decision by the government to gazette the TMP, provide many opportunities to improve current fisheries management efforts. These opportunities and the findings of this study provide the basis of our recommendations on what and how management efforts can be adopted in the proposed Tun Mustapha Park.

## ABBREVIATIONS

%	percent
ca.	approximately
DOF	Department of Fisheries
ECFZ	East Coast Fishing Zone
et al.	and others
FSSPSB	Fook Soon Sea Product Sdn. Bhd
GRT	gross tonnage
i.e.	that is
LBK	Lembaga Bandaran Kudat
mt	metric ton
SATSB	Siong Ann Trawler Sdn. Bhd
Sdn Bhd	Sendirian Berhad
sp.	species
spp.	sub-species
TFZ	Tawau Fishing Zone
TMP	Tun Mustapha Park
WCFZ	West Coast Fishing Zone
WWF	World Wide Fund for Nature

## I. INTRODUCTION

The commercial fishing areas of Sabah are divided into three main zones, i.e. the West Coast, East Coast and Tawau zones (Fig. 1). The West Coast Fishing Zone (WCFZ) extends from the Brunei Bay in southwest Sabah to the northern tip of Sabah at the western border of Kudat District. The East Coast Fishing Zone (ECFZ) extends from the Kudat District to Tambisan at the north tip of the Dent Peninsula in Sandakan District, whereas the Tawau Fishing Zone (TFZ) extends from Tambisan to Cowie Bay in Tawau District. Commercial fishing licenses are issued based on these three fishing zones. Within each zone, fishing activities and operations are further delimited to specific sub zones (i.e. distance from the shore), depending on gear type and boat size.

The proposed Tun Mustapha Park (TMP) falls mainly within the ECFZ, with a small area also falling within the WCFZ. Fishers issued with commercial fishing licences by the Sabah Fisheries Department in both Kudat and Sandakan Districts operate within the ECFZ. Initial observations indicate that it is a common practice by fishing boats which start their operation from Sandakan port to land their catch in Kudat port and vice versa. The establishment of the TMP will require spatial management of fishing grounds and fishing operations within this area, whilst taking into account existing fishing zones. Affected stakeholders include commercial fishers operating within the TMP, whose fishing licence is either registered in Kudat or Sandakan district. Hence, to establish spatial management of fisheries within the TMP, it is important to understand the existing fishing patterns of fishermen from these two districts.



**Figure 1.** Map of Sabah, indicating major coastal towns, the proposed Tun Mustapha Park, and the three commercial fishing zones, i.e. *Zon Pantai Barat* (West Coast Zone), *Zon Pantai Timur* (East Coast Zone), and *Zon Tawau* (Tawau Zone). (Map courtesy WWF-Malaysia).

Two predominant commercial fishing gears used in the ECFZ are the trawl net (*pukat tunda*) (Fig.2A) and purse seine net (*pukat jerut ikan* and *pukat jerut bilis*) (Fig.2B). For licensing and statistical purposes, the Sabah Fisheries Department categorises both trawlers and purse seiners into 5 sizes according to gross tonnage (GRT), i.e. 0-9.9 GRT, 10-24.9 GRT, 25-39.9 GRT, 40-69.9 GRT, and 70 GRT and above. Fishing boats of *pukat jerut bilis* (anchovy purse seine net), falls into only two of these size categories, i.e. 10-24.9 GRT, and 25-39.9 GRT. A fundamental rule for commercial fishing permits (licenses) is the prohibition to operate within 3 nautical miles (nm) from the mainland, and between 1 to 2 nm from islands (depending on the protection status of an island; e.g. 2 nm from Turtle Island Marine Protected Area). This zone is reserved for fishing using traditional or non-mechanised gears but encroachment by commercial vessels is rampant (e.g. see Daily Express 2008, 2009).



**Figure 2.** (Left) A fleet of trawlers; (Right) A purse seiner. Both types of fishing boats were seen docked at Kudat fishing ports (August 2010).

Presently, both types of fishing gears have been blamed as the primary cause of overfishing and fish (including non-fish) habitat degradation in the ECFZ (Aman-Sham et al., 2010). Moreover, it was also recently observed that many of the purse seine fishing boats have been modified through the installation of high wattage spotlight bulbs, which according to the stakeholders (particularly the commercial fish boat owners), is a means to increase the efficiency of attracting fishes during their fishing operations (carried out at night). As for trawlers, it was noted that many of the boats have resorted to using small-sized mesh nets, also as a 'strategy' to increase fishing efficiency. Such modifications of the fishing gears certainly increase catch per unit effort, due to increased non-selectivity. However, this is at the expense of capturing more small-sized fishes from almost every life stage of a species. Hence, understanding the commercial fisheries industry of Kudat and Sandakan districts is important for the establishment of a management regime in the TMP.

## **2. AIMS AND OBJECTIVES**

The aim of this project is to assess the feasibility of establishing spatial management of two commercial fishing gears, i.e. trawl and purse seine, in the TMP. Data generated will provide information that will contribute towards the (on-going) spatial zoning process for the TMP and enhance understanding of the fishing patterns within the ECFZ; which will help facilitate further consultations with relevant stakeholders towards establishing a fisheries management mechanism within the TMP. The specific objectives of this project are to assess the status of two predominant commercial fisheries, trawl and purse seine fisheries in Kudat and Sandakan districts.

## **3. METHODS**

The scope of work included field surveys, deskwork analysis of Sabah's annual fisheries statistics (14 years data from 1995-2008)<sup>1</sup>. Additionally, a two-day practical fish taxonomy workshop was organised for five WWF-Malaysia fisheries observers based in Kudat. The workshop was held at the Borneo Marine Research Institute at Universiti Malaysia Sabah (2-3 September 2010).

Field samplings were carried out simultaneously at the two study sites, i.e. Kudat and Sandakan fish landing sites, from mid-August to end of October 2010. Due to unavoidable circumstances, data collection in Sandakan was only carried out until the end of September 2010. A project Research Assistant was each based in the respective sites during that period, and tasked to collect fisheries data on actual (current) fishing activities for trawlers and purse seiners, including data on intensity of light used on a purse seine fishing boat. At sea observations of commercial trawl fishing operations continued until December 2010. Datasheet used to record landing data follows Jumin et al. (2010).

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<sup>1</sup> NOTE: published Sabah Annual Fisheries Statistics was available up to 2007; unpublished partial-2008 data was made available by DOF on request), and a presentation to stakeholders in the TMP (which was held on 23-24 September 2010).

## 4. COMMERCIAL FISHERIES IN THE EAST COAST FISHING ZONE

During this study, it was observed that fishing boats registered in Kudat (KT), Beluran (BN) and Sandakan (SN, SKD) districts operated in the ECFZ. However, we also received feedback from Kudat-based fishermen, of fishermen from the WCFZ encroaching into the ECFZ. Registration of fishing boats is by districts, and each fishing boat will return to their respective district (where their boat is registered) to land their catch. It was also observed that several Sandakan fishermen have moved to Kudat, and at the same time have applied for a new fishing licence from the Kudat DoF office while retaining their original registration number. It was noted that while fishing licences are issued by the Sabah Department of Fisheries, all marine vessels for private- and commercial-use are registered by the Sabah Department of Ports and Harbours. It is further noted that the issuance of new commercial (fish and prawn) trawl fishing licences has been frozen (stopped) since year 2004 (Kissol, pers. comm., Sept 2010; Chin, pers. comm. 2006). All registered and licensed commercial fishing vessels receive subsidized fuel (petrol) from either *Ko-Nelayan* (a State government agency) or *Lembaga Kemajuan Ikan Malaysia* (LKIM) (a Federal government agency) as well as other benefits (e.g. fibreglass boats, outboard engine etc.)

### 4.1 Fishing grounds

Information on the commercial fishing grounds within the ECFZ were initially obtained through dialogues and interviews with fishing boat captains, as well as chairmen of the relevant associations (e.g. Chair of Kudat Fishing Boat Owners Association, Chair of Sandakan Fisheries Association). For both Kudat and Sandakan, the trawling grounds in these respective districts were further verified by survey team members who participated in actual fishing operations on-board commercial fish and prawn trawlers in the respective districts.

In Kudat, the fishing grounds for both trawlers and purse seiners were concentrated around 'Banggi-Balambangan', 'Malawali-Mandi Darah', and 'Banggi-Kudat'. The fishing grounds were largely overlapping, except the area in Marudu Bay (no purse seiners operating there) (Fig. 3). We noted that the three most important prawn trawling grounds here were Marudu Bay, Mandi Darah and Tigabu area. Of these three areas, most Kudat-registered prawn trawlers were found to operate within the Marudu Bay, which is relatively close to Kudat town. Due to the short distance between Marudu Bay fishing ground and the landing ports of Kudat town, the prawn trawl operators conduct their fishing activities there on a daily basis, i.e. departing the Kudat port from late in the afternoon to early evening and returning with their catch in the morning of the following day. Fishing takes place throughout the year as the area is generally

sheltered from strong winds and bad weather. Moreover, the coasts around Marudu Bay are richly lined with mangrove forests, which contribute to the area being an important prawn habitat.

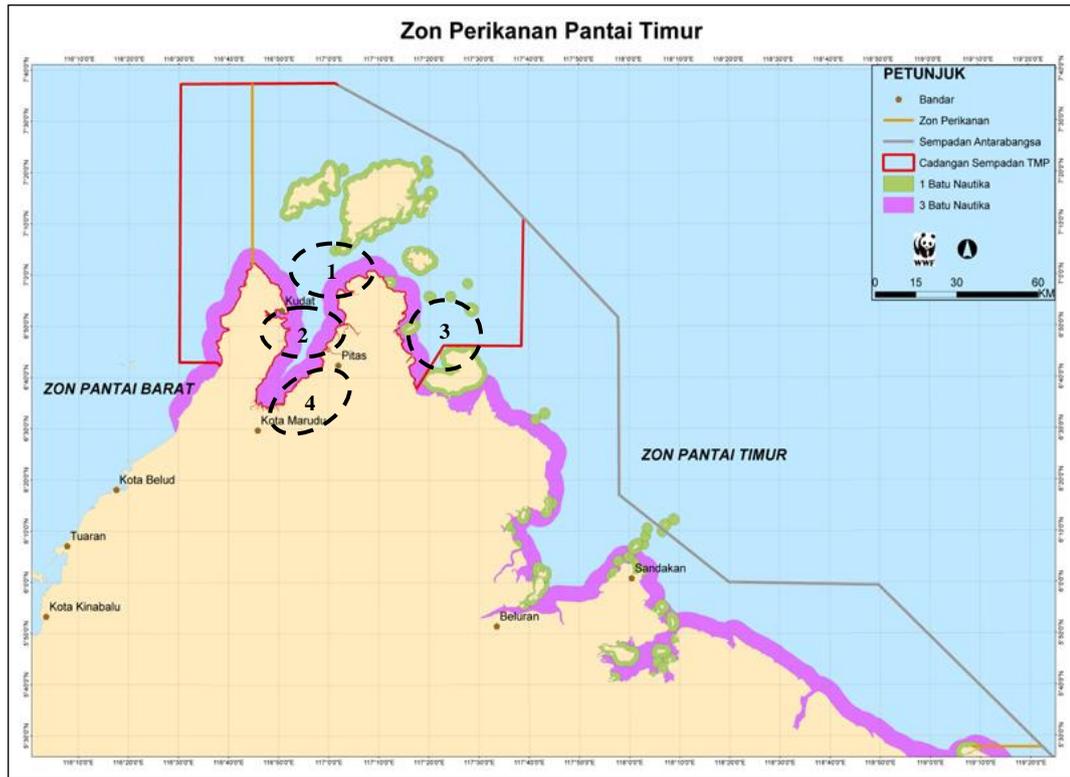
In Mandi Darah area, only four prawn trawlers were found operating here, all of which are owned by villagers residing on Mandi Darah Island. According to a Pulau Mandi Darah resident, Mr. Romi (pers. comm., October 2010), other trawlers are prohibited (by the Kg. Mandi Darah villagers) from trawling in the area and those who attempt to trawl close to Mandi Darah will be chased away by the villagers. The (Kudat-registered) Mandi Darah trawlers are listed in Table I.

The third prawn trawling area, Tigabu, is located furthest from Kudat town, and thus considered as an alternative prawn trawling area for Kudat-registered prawn trawl operators. (In Fig.3, this area is located on the southeastern-most boundary of the 'Malawali-Mandi Darah' fishing ground.) According to a prawn trawl owner, Mr. Voon (pers. comm, October 2010), his boat will travel to Tigabu for 5-6 days, which is normally between November and January of the following year, as this period is considered as the 'best' prawn season for Tigabu area (Note: monthly catch trend analyses of the Annual Fisheries Statistics for prawn trawler landings for Kudat and Kota Marudu correspond with this information; see Fig. 9, Chapter 4.2). He and the other prawn trawlers will operate the trawl net at night, and anchor around Tigabu Island during the day. We further noted that Tigabu is also the stopping point for trawlers based in Beluran and Sandakan towns. Such trawlers will start trawling northwards from the Beluran area, operating past Jambongan Island until Tigabu area, stop there (Tigabu) for a few days before returning back to Beluran or Sandakan to land their catches. A rapid count of trawlers observed operating and berthed around Tigabu was conducted by the second author from the 21<sup>st</sup> to 25<sup>th</sup> October 2010. With the exception of the first day, an average of 6 trawlers with Sandakan and Beluran registration number were observed to operate in a day within the area. The first day was excluded from the count due to the high number of trawlers (23 trawlers) from Sandakan that came to Tigabu to attend a wedding.

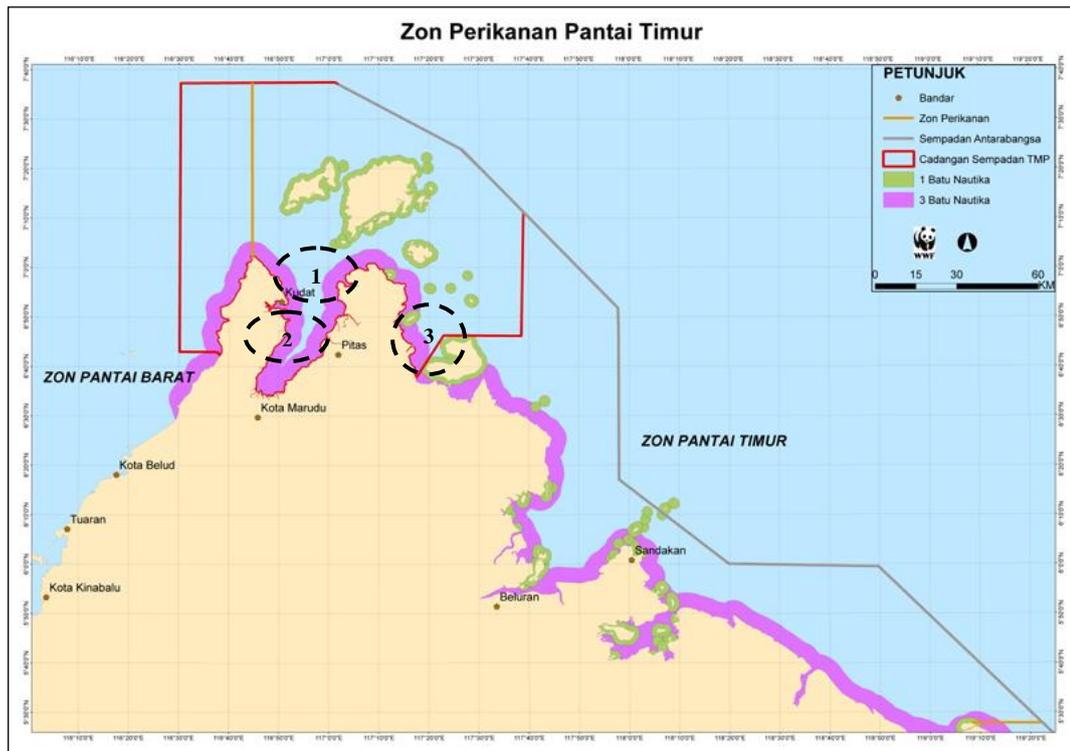
**Table I.** Registration numbers of prawn trawlers owned and operated by villagers of Mandi Darah. The name of the skipper is indicated where known. (Note: Data record based on observation and interview with both Mr. Jamil and Mr. Romi on 21<sup>st</sup> October 2010.

Registration Number	Skipper
KT 3000/3F	Jamil
KT 6200/3	Romi
KT 5071/F	unknown
KT 6089/F	unknown

A

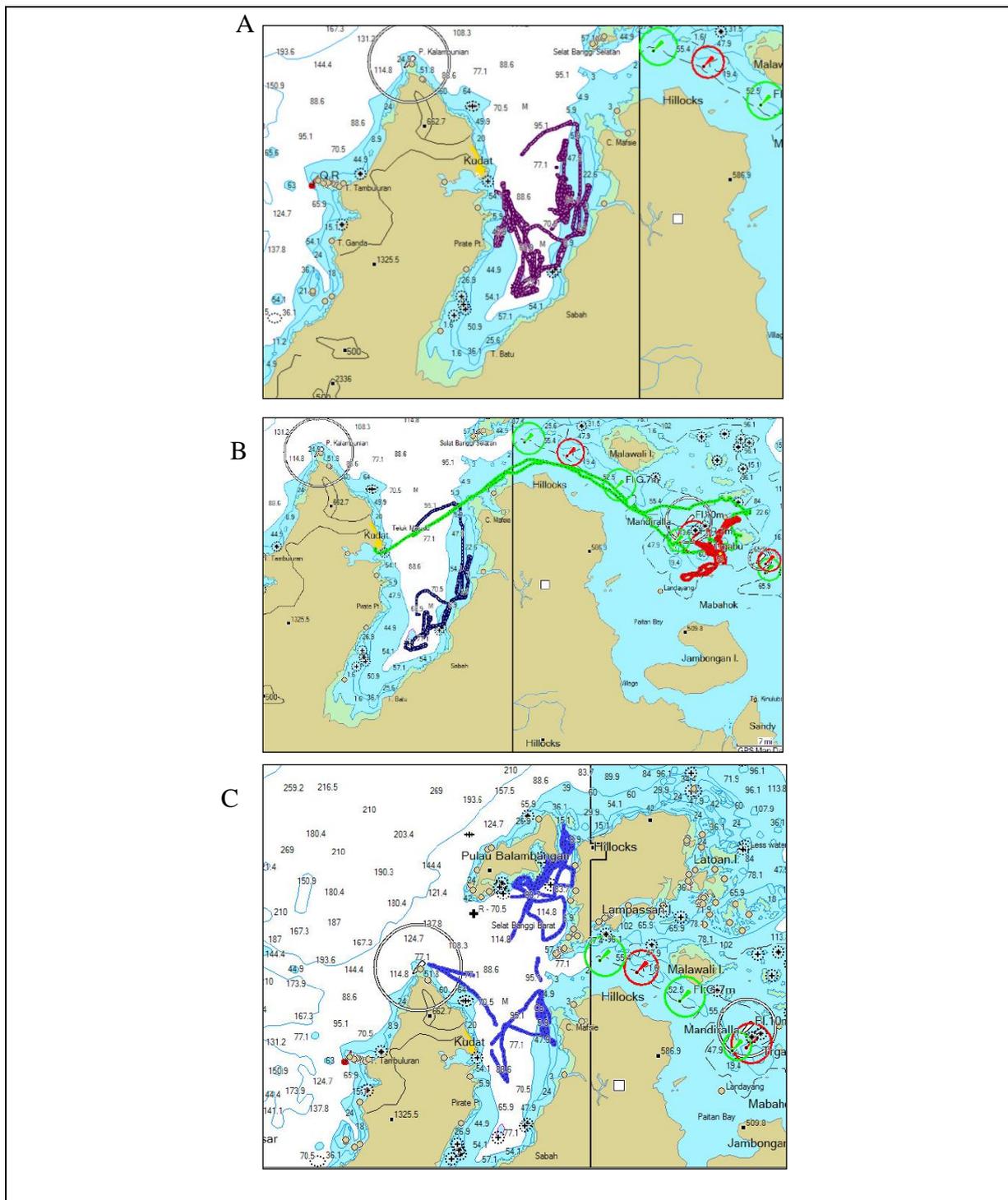


B



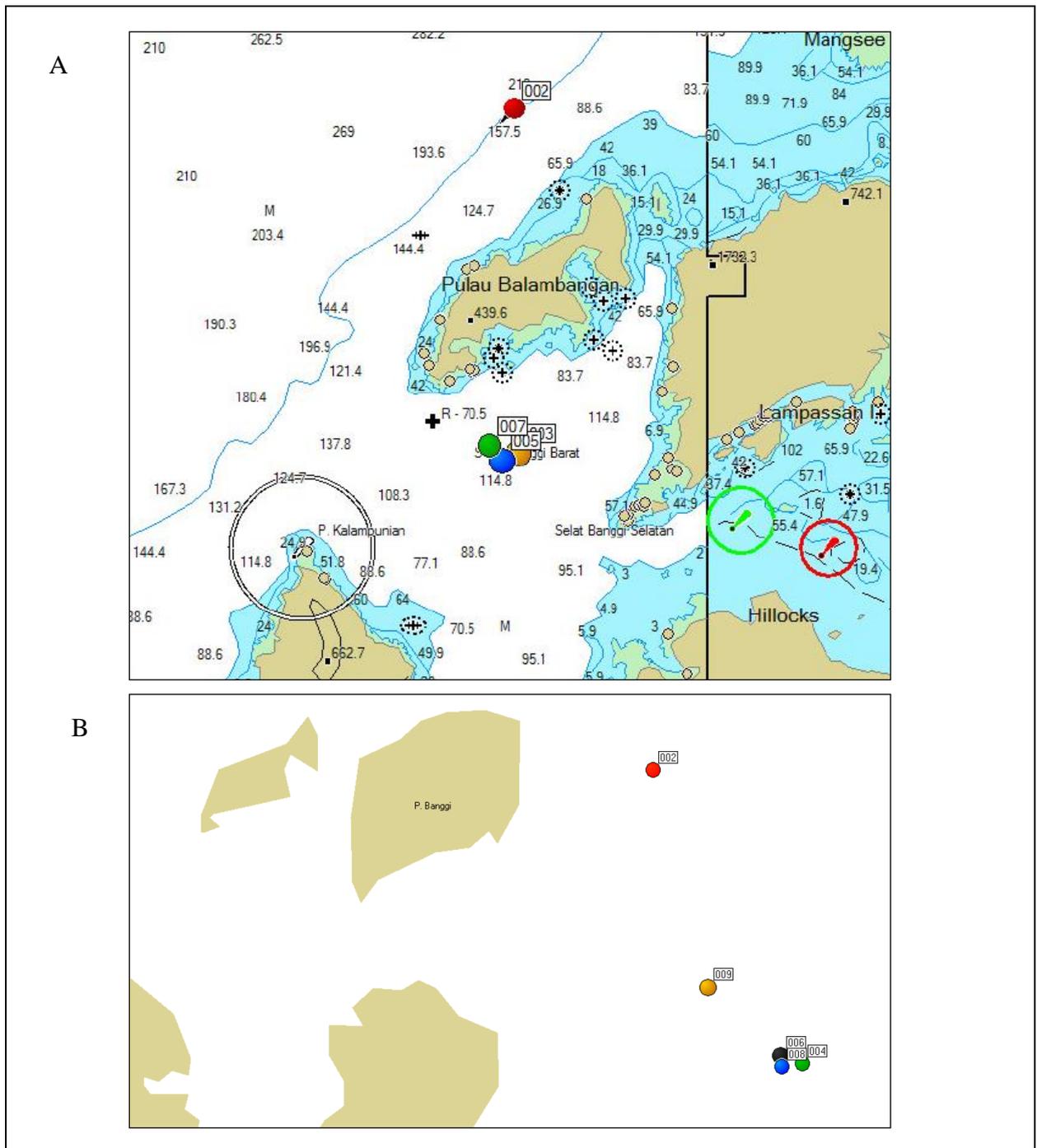
**Figure 3.** Commercial fishing grounds (black dash-circles) of Kudat-based fishing boats. A- trawling grounds; B- purse seining grounds. 1 – ‘Banggi-Balambangan’; 2 – ‘Banggi-Kudat’; 3 – ‘Malawali-Mandi Darah’; 4 – ‘Marudu Bay’.

The commercial trawl tracks in Kudat are shown in Fig.4.



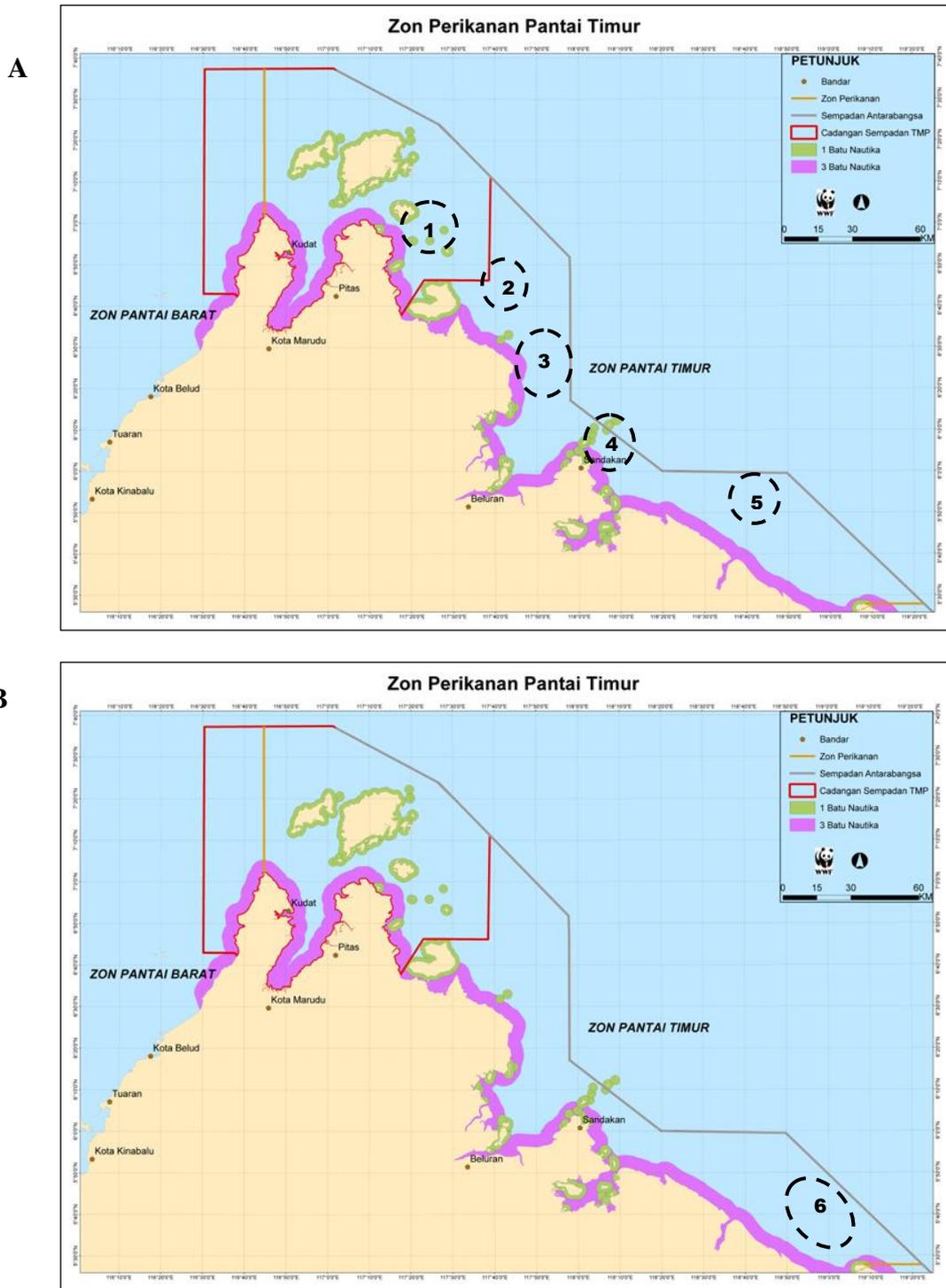
**Figure 4.** Commercial trawl tracks in Kudat. A- Prawn trawl tracks in the Marudu Bay (28 September – 10 October 2010); B- Prawn trawl tracks in the Marudu Bay (9-10 October 2010; Blue track) and Tigabu area (22-25 October 2010; Red track); C- Fish trawl tracks off Marudu Bay and the Banggi-Balambangan area (3-16 November 2010);

Additionally, in situ observations of purse seiners in Kudat were also made. The positions of the purse seiners are shown in Fig. 5.



**Figure 5.** Commercial purse seine grounds in Kudat. A- Locations in the Banggi-Balambangan and Banggi-Kudat areas (5-6 December 2010); B- locations in the Malawali-Mandi Darah area (10-12 December 2010).

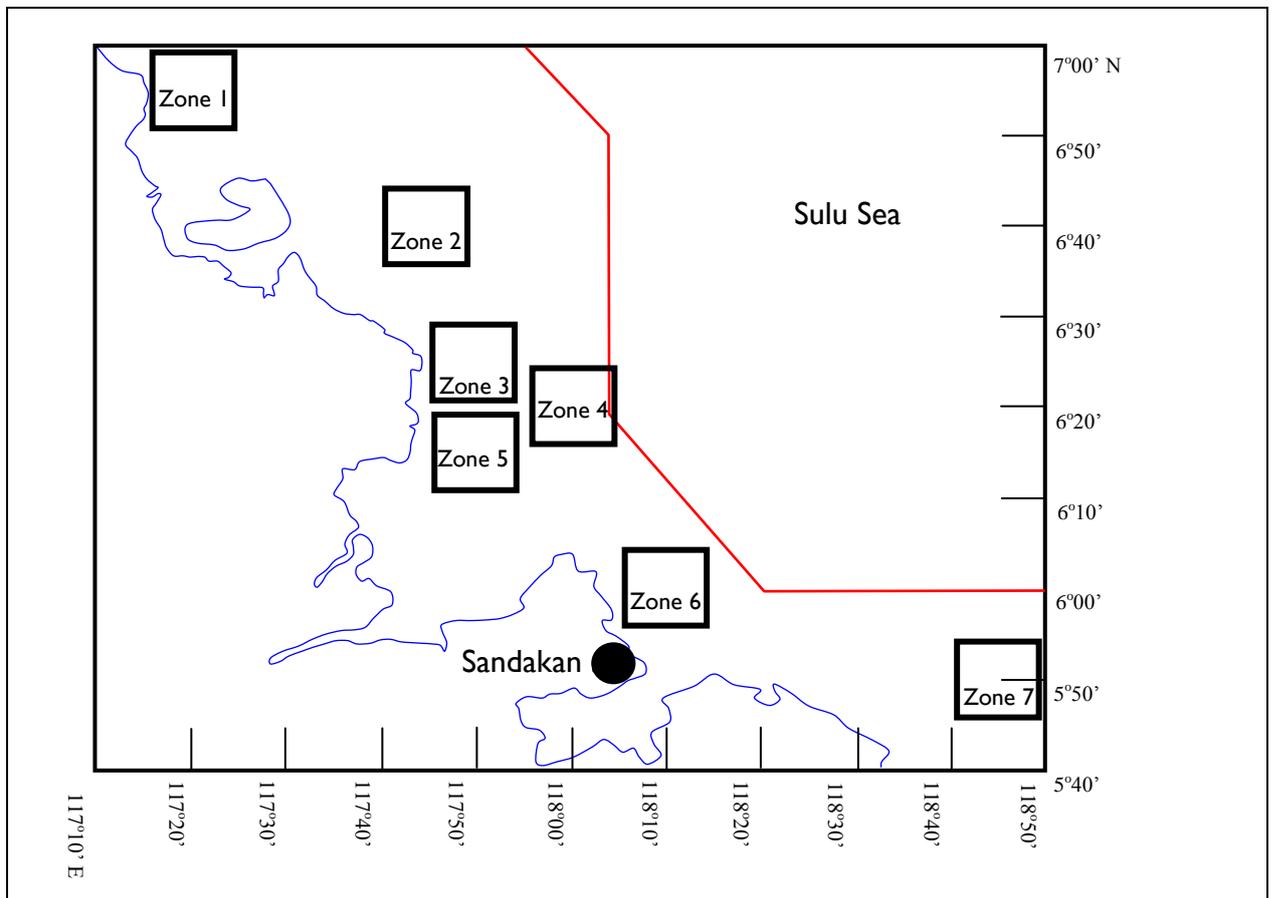
As for Sandakan, trawlers were concentrated in the Labuk Bay, whereas purse seiners were concentrated in the Tambisan area (Dent peninsula) (Fig. 6).



**Figure 6.** Commercial fishing grounds (black dash-circles) of Sandakan-based fishing boats. A- trawling grounds; B- purse seining grounds. 1, 2, 3, 4, 5 – ‘Labuk Bay’; 6 – ‘Tambisan’.

Data of commercial fish trawling grounds in the Labuk Bay which was obtained from a separate study is shown in Fig.7 (Manjaji-Matsumoto & Lim, in prep.). The fishing grounds were represented as a grid, and divided into seven zones. The GPS coordinates of each zone is shown in the following, where each zone was labelled with the name the area as known to the fishermen (i.e. skipper of the respective commercial trawlers):

- Zone 1 (Mandi Darah): 6°50'N–7°00'N; 117°15'E–117°25'E;
- Zone 2 (Jambongan): 6°35'N–6°45'N; 117°40'E–117°50'E;
- Zone 3 (Sugut): 6°20'N–6°30'N; 117°45'E–117°55'E;
- Zone 4 (Lankayan): 6°15'N–6°25'N; 117°55'E–118°05'E;
- Zone 5 (Pura-pura): 6°10'N–6°20'N; 117°45'E–117°55'E;
- Zone 6 (Nunuyan): 5°55'N–6°05'N; 118°05'E–118°15'E, and
- Zone 7 (Sungai Asam): 5°45'N–5°55'N; 118°40'E–118°50'E.



**Figure 7.** Commercial trawling ground in Labuk Bay. Fishing grounds are represented as a grid, and divided into seven zones (see text; adapted from Manjaji-Matsumoto & Lim, in prep.)

## 4.2 Fish landing ports

There were several fish landing ports in each Kudat and Sandakan district, where both public (government-built) and privately-owned landing ports exist. Access to all privately-owned fish landing ports is restricted, accessible to other users through payment of fees or through association with the company that owned the jetty. On the other hand, landing rights may be given based on an earlier arrangement made between the port owner and the fishing vessel owner, in which the former provided the latter with some form of loan to enable the latter to go fishing.

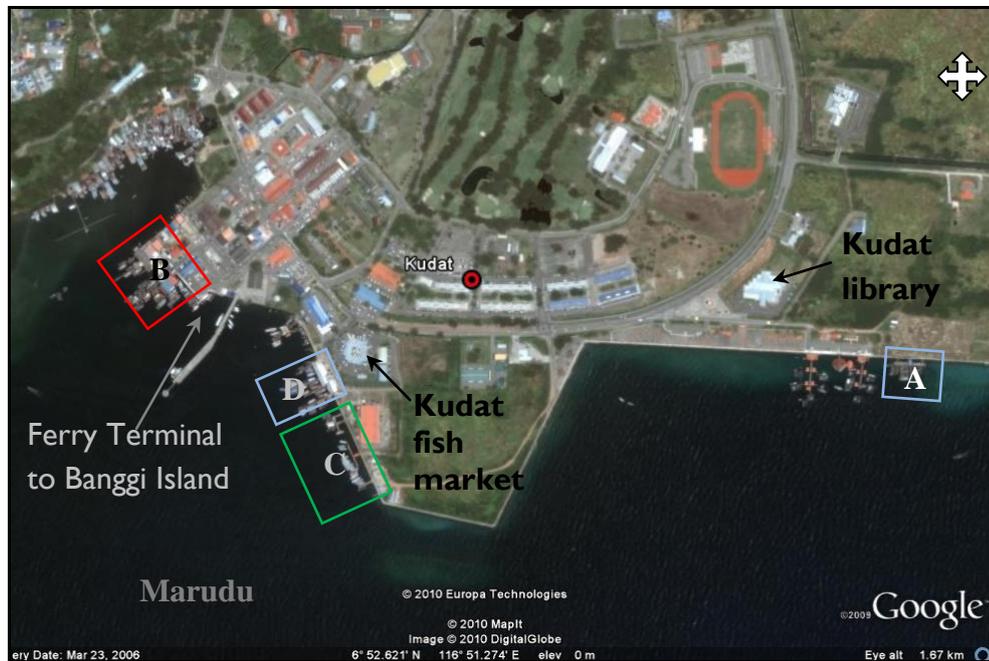
The private ports were operated by either a single company, or a consortium of companies under an umbrella fisheries association. In Kudat and Sandakan, we noted that many of the landings were loaded directly onto waiting 'fish transporter' pickup trucks soon after the catch was unloaded from the fishing boat and weighed on site (see *also* Manjaji-Matsumoto, 2007). Based on the business address (as painted on the door of the pickup trucks), these fish transporters were from the district itself (i.e. Kudat or Sandakan), as well as other towns on the west coast of Sabah, i.e. Keningau, Kota Belud, Kota Marudu, and Penampang. In Sandakan, non-Sabah addressed trucks, i.e. Sarawak and Brunei, were observed.

Along Sabah's northeast coast are three other coastal districts, i.e. Kota Marudu, Pitas and Beluran. As there were no major fish landing ports in these districts, the fish markets here were not visited in this study. Nevertheless, analyses of the annual fisheries statistics included these three districts (see Chapters 4 & 5).

### 4.2.1 Kudat

There are 4 clusters of landing ports in Kudat: 'Esplanade', 'Angkasa Lama (Fook Soon)', 'Angkasa Baru', and 'Saw Seng Eng'; these names were as given by Kudat residents (there were no sign-boards to indicate these sites) (Fig.8). Esplanade landing port serves as the main landing port for prawn trawlers. The port is managed by Fook Soon Sea Product Sdn. Bhd. (FSSPSB). Angkasa Lama landing port serves as the main landing port for fish trawlers and purse seiners. Additionally, this port also serves as the distribution point of government-subsidised fuel. The place is owned by Ko-Nelayan, and leased to FSSPSB. Angkasa Baru landing port consists of three jetties, of which one each is owned by FSSPSB and Siong Ann Trawler Sdn. Bhd. (SATSB), and the third is a public jetty under the jurisdiction of the Lembaga Bandaran Kudat (LBK). These jetties cater to the landing of (fish and shrimp) trawl as well as purse seine catches. The private jetties are mainly used by the respective company's own boats while the public jetty is used by smaller scale fishermen operating a small number of fishing boats. Adjacent this landing port are two seafood packaging factories, i.e. Merak Hati and Fook Soon Seafood, which are two main Kudat-based seafood exporters. Saw Seng Eng landing port serves as the landing port for trawlers,

purse seines, crab fishing boats, and smaller types of smaller fishing others. This is a privately-owned jetty managed by Saw Seng Eng. A few smaller public jetties adjacent Saw Seng Eng's jetty exist; these are open to small scale and individual fishermen.



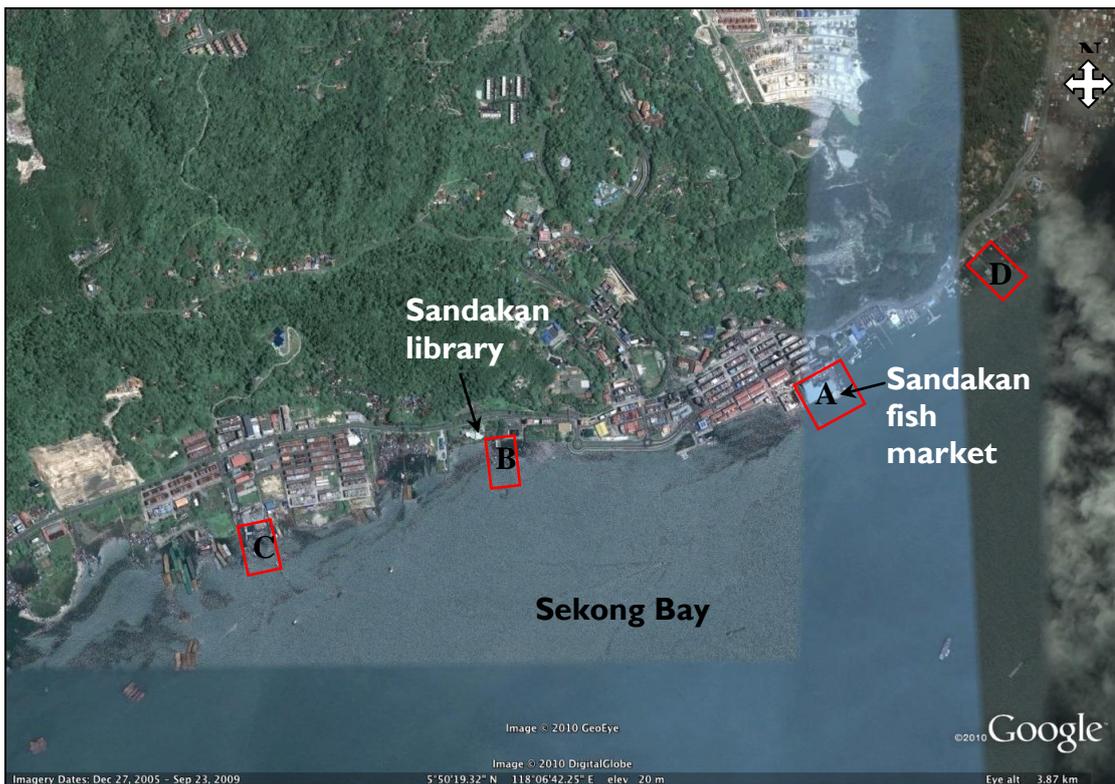
**Figure 8.** Google aerial map of Kudat town. Four clusters of (A,B,C and D) fish landing ports are indicated: A- 'Esplanade', B- 'Angkasa Lama' (Siong An/Lembaga Bandaran Kudat/Fook Soon), C- 'Angkasa Baru' (Operated by Fook Soon/Ko-Nelayan), and D- 'Saw Seng Eng'.

#### 4.1.2 Sandakan

In Sandakan, there are at least four major fish landing ports, including one public port which is the Sandakan fish market located within the Sandakan Central Market (Fig.9). The three privately-owned ports belong to the Sandakan Fisheries Association Jetty, Widegrowth Jetty, and Sabah Sea Jetty (owned by Sabah Sea Produce Sdn. Bhd.). A fourth privately-owned jetty was observed (Wing Lin Jetty; location not shown in Fig.9). No data were collected for this study from Sabah Sea and Wing Lin jetties as access was not granted by the owners/operators.

Sandakan Central Market is the only public fish landing port here, and the Sandakan fish market is the major fish market on Sabah's east coast. This port is also utilised by islanders and locals inhabiting remote coastal areas of the mainland. There are generally two daily landings, late afternoon (ca.15:00 hrs) and early evening (ca.18:00 hrs). However, the evening landings are only unloaded the following morning (ca.03:00-06:00 hrs); this is when the entire market is at its busiest. The Sandakan Fisheries Association Jetty serves as a landing port for trawlers. Widegrowth Jetty is owned and operated by

Widegrowth Marine Products Sdn. Bhd. The company operates both fish trawlers and purse seiners, and there is a fish processing factory on site. It was noted that other fishing boat owners utilise this jetty. The company's fishing fleets will stay at sea for up to a week per fishing trip (for trawlers), and for several months (for purse seiners). However, there are daily 'transporter boats' that will transport the catches back to mainland for processing as well as bring in the daily ration for the fishing boat crew. These transporter boats will first unload their catch to this port for the catch to be sorted. The boats will then move to the Sandakan Central Market port to unload (some of) the sorted catch. During this survey, only one purse seine boat was observed at dock.



**Figure 9.** Google aerial map of Sandakan town. Four major (A, B, C, D) fish landing ports are indicated: 'Sandakan Central Market'-A, 'Sandakan Fisheries Association'-B, 'Widegrowth'-C, and 'Sabah Sea'-D'.

## 5. TRAWL FISHERY

There are two types of trawlers, i.e. fish and prawn trawlers. The type of trawler is indicated in the fishing boat registrar of DOF Kudat, but not of DOF Sandakan. In the latter, type of licence is merely indicated as 'pukat tunda (311)' or 'pukat tunda (312)'. It was found out during this survey, that the same trawler boat may be alternately used for both (fish and prawn) types of fishing operations. This is done by merely changing the fishing net (prawn trawl net is smaller than fish trawl net) prior to trawling operations. In Kudat, prawn trawlers operate at night, and the duration per fishing operation may be 1, 2, 3 or 6 nights continuously. Prawn trawlers operate closer to the shore, and frequently encroach into the restricted zone (i.e. within the 3nm limit).

For the purpose of documentation in this study, a trawler was determined as 'prawn trawler' when it landed its catch at a particular landing port (i.e. in Kudat, at the 'Esplanade'), and when possible, confirmed by the boat skipper/crew. However, for Sandakan, it was not possible to distinguish between the two types of trawlers; therefore, all the trawlers there were considered as 'fish trawlers'.

### 5.1 Number of fishing boats

In Kudat, out of 113 (fish and prawn) trawlers currently listed (based on 2010 data; Appendix 1A), only 62 were observed throughout this study. These comprise of 28 fish trawlers and 34 prawn trawlers, and were registered to 16 names (comprising 4 companies, and 12 individuals) (Table 2).

In Sandakan, out of 335 trawlers (based on 2010 data; Appendix 1B), only 70 were observed. However, not all of the observed fishing boats were on the list of registered boats in Sandakan or in Kudat (hence, these were listed as 'unknown') (Table 3).

**Table 2.** List of trawlers observed at Kudat landing ports (August – October 2010)

No.	Registration number	Registered owner(s)
<i>Fish trawlers</i>		
1	SN 809/F	Angkasa (Sabah) Sdn. Bhd.
2	KT 895/ F	Fook Soon Seafood Product Sdn. Bhd.
3	KT 97/ F	Fook Soon Seafood Product Sdn. Bhd.
4	SKD00012/F	Fook Soon Seafood Product Sdn. Bhd.
5	KT 22/F	Gaya Fishing Sdn. Bhd.
6	KT 328/F	Siong Ann Trawler Sdn. Bhd.

No.	Registration number	Registered owner(s)
7	KT 442/F	Siong Ann Trawler Sdn. Bhd.
8	KT 8/F	Siong Ann Trawler Sdn. Bhd.
9	KT 808/F	Siong Ann Trawler Sdn. Bhd.
10	KT 858/F	Siong Ann Trawler Sdn. Bhd.
11	KT 89/F	Siong Ann Trawler Sdn. Bhd.
12	KT 898/F	Siong Ann Trawler Sdn. Bhd.
13	KT 9/F	Siong Ann Trawler Sdn. Bhd.
14	KT 90/F	Siong Ann Trawler Sdn. Bhd.
15	KT 98/F	Siong Ann Trawler Sdn. Bhd.
16	KT 988/F	Siong Ann Trawler Sdn. Bhd.
17	KT389/F	Siong Ann Trawler Sdn. Bhd.
18	KT390/F	Siong Ann Trawler Sdn. Bhd.
19	SKD 00003/F	Siong Ann Trawler Sdn. Bhd.
20	KT 3289/F	Chang Mook Shoi & Chang Mook Shui
21	KT 896/F	Chang Mook Shoi & Chang Mook Shui
22	KT 78/F	Chong Chiun Leong
23	KT 996/F	Hiew Yun Foh
24	KT 28/F	Lee Kiau Wui
25	KT 688/F	Lee Kwen Leong
26	SN 1688/F	Liong Soo Ha
27	SN 4328/F	Lu Kon Hee
28	KT 1688/F	Ng Syn Yee
<i>Prawn trawlers</i>		
1	BN 223/F	Fook Soon Seafood Product Sdn. Bhd.
2	KT 1999/F	Fook Soon Seafood Product Sdn. Bhd.
3	KT 436/F	Fook Soon Seafood Product Sdn. Bhd.
4	KT 86/F	Fook Soon Seafood Product Sdn. Bhd.
5	KT10/F	Fook Soon Seafood Product Sdn. Bhd.
6	SN 10/F	Fook Soon Seafood Product Sdn. Bhd.
7	SN 1055/F	Fook Soon Seafood Product Sdn. Bhd.
8	SN 1663/F	Fook Soon Seafood Product Sdn. Bhd.
9	SN 2341/F	Fook Soon Seafood Product Sdn. Bhd.
10	SN 269/F	Fook Soon Seafood Product Sdn. Bhd.
11	SN 309/4F	Fook Soon Seafood Product Sdn. Bhd.
12	SN 5078/F	Fook Soon Seafood Product Sdn. Bhd.

No.	Registration number	Registered owner(s)
13	SN 5938/F	Fook Soon Seafood Product Sdn. Bhd.
14	SN 61/F	Fook Soon Seafood Product Sdn. Bhd.
15	SN 6169/F	Fook Soon Seafood Product Sdn. Bhd.
16	SN 6212/F	Fook Soon Seafood Product Sdn. Bhd.
17	SN 720/F	Fook Soon Seafood Product Sdn. Bhd.
18	SN 981/F	Fook Soon Seafood Product Sdn. Bhd.
19	TB 647/F	Fook Soon Seafood Product Sdn. Bhd.
20	KT 328/F	Siong Ann Trawler Sdn. Bhd.
21	KT 747/F	Siong Ann Trawler Sdn. Bhd.
22	KT 88/F	Siong Ann Trawler Sdn. Bhd.
23	SN 100/F	Siong Ann Trawler Sdn. Bhd.
24	KT 1480/F	Baharuddin B. Soon Sang
25	KT 1288/F	Chong Chee Wai
26	BN 868/F	Lu Kon Hee
27	KT 229/F	Lu Kon Hee
28	SN 1666/F	Lu Kon Hee
29	SN 2556/F	Lu Kon Hee
30	SN 392/F	Lu Kon Hee
31	SN 7/4F	Lu Kon Hee
32	SN1638/F	Lu Kon Hee
33	KT 3990/F	Mohd Amin B. Ismail
34	SN 212/4F	Wang Kam Shing

**Table 3.** List of trawlers observed at Sandakan landing ports (August – September 2010)

No.	Registration number	Registered owner
1	BN 333/4F	Fung Yok Ching
2	BN 338/4F	unknown
3	BN 353/4F	unknown
4	BN 368/4F	Tham Teck Kheong
5	BN 399/4F	Tan Kin Swan
6	BN 403/4F	unknown
7	BN 639/4F	unknown
8	BN 648/4F	unknown

No.	Registration number	Registered owner
9	BN 666.4/F	Liew Nyuk Fah
10	BN 686/4F	unknown
11	BN 818/4F	Fung Yok Ching
12	BN 883/4F	Syt. Hai Lee Enterprise
13	BN 898/4F	Fung Yok Ching
14	BN 913/4	Ku Bersaudara
15	LD 2188/F	unknown
16	SN 1039/F	unknown
17	SN 1122/4F	Wong Wai Kong
18	SN 1339/4F	unknown
19	SN 1475/4F	unknown
20	SN 182/4F	unknown
21	SN 198/4F	unknown
22	SN 1989/4F	Sheak Kam Hong
23	SN 215/4F	unknown
24	SN 2265/4F	Mohayaran Bt. Bisman
25	SN 2358/4F	unknown
26	SN 2477/4F	unknown
27	SN 2480/4F	unknown
28	SN 2483/4F	unknown
29	SN 2492/4F	unknown
30	SN 2500/F	Voo Fook Ming
31	SN 2511/4F	unknown
32	SN 2693/4F	unknown
33	SN 3020F	Chia Eng Kiow
34	SN 3021F	Chia Eng Kiow
35	SN 3039/4F	unknown
36	SN 350/4F	Liew Nyuk Fah
37	SN 3683/4F	Ocean Spring Enterprise
38	SN 4396/45	Quek Joo Seng@Kok Joo Seng
39	SN 4770/4F	unknown
40	SN 585/4F	Ungas B. Siaban
41	SN 5899/4F	unknown
42	SN 5933/4F	Tan Hang Sang
43	SN 5958/4F	unknown
44	SN 6060/4F	Chia Yong Seng

No.	Registration number	Registered owner
45	SN 6065/4F	unknown
46	SN 6089/4F	unknown
47	SN 6243/4	unknown
48	SN 6400/4F	unknown
49	SN 6682/4F	unknown
50	SN 6766/4F	Tan Hang Sang
51	SN 6809/4F	unknown
52	SN 707/4F	Khoo Bun Leng
53	SN 721/4F	unknown
54	SN 737/4F	unknown
55	SN 818/4F	unknown
56	SN 822/F	Chong Nyuk Hung
57	SN 844/4F	unknown
58	SN 979/4F	Wong Cho Sap
59	SSK 002299/F	unknown
60	SSK 00298/F	Wing Fatt Cold Storage
61	SSK 00299/F	Wing Fatt Cold Storage
62	SSK 00311/F	T.K. Enterprise (c/o Widegrowth Marine Produce)
63	SSK 00487/F	unknown
64	SSK 00493/F	unknown
65	SSK 00498F	unknown
66	SSK 800/4F	unknown
67	SV 6777/4F	unknown
68	TB 576/4F	Sabah Sea Produce Sdn. Bhd.
69	TT 54/F	Unknown
70	TT 88/4F	Fung Yok Ching

## 5.2 Catch trend analysis

The relationship between total catch (total landing) and the number of trawlers during the period 1995-2008 for four districts (Beluran, Sandakan, Kota Marudu and Kudat) within the ECFZ is shown in Fig. 10. It was noted that during this period, the number of trawlers in each district remained more or less stable on an annual basis. There were no recorded trawl landings in Pitas, which is one of three coastal districts within the TMP (see 'Pitas' in TRPD, 2000), and also one of the fish landing ports listed in the

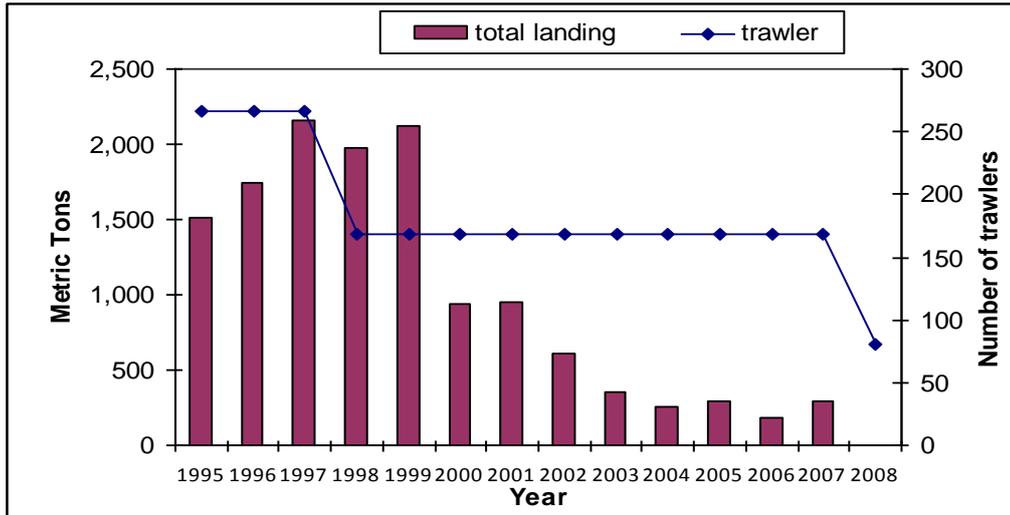
Sabah Annual Fisheries Statistics), although eight trawlers were registered there during the same period (1995-2007; 2008 data not available). It was further noted that data for Kota Marudu trawl catches was available only up to 2002, although the number of trawlers remained the same (six), since 1998, and that in 2008, there were no registered trawler there. The reason for this (i.e. absence of landing data since 2003) was probably due to the trawlers landing their catches in Kudat landing ports instead, beginning 2003. Moreover, although the fishing trawler size '70 GRT & above' was listed in the fisheries statistics, catch data of such boat size was 'zero' for all four districts. During this survey (August-December 2010), none of the boats observed were of this size (70 GRT & above).

Among the four districts, Sandakan had the most number of trawlers (n=683), whilst Kota Marudu and Pitas each has less than ten registered trawlers, i.e. 6 and 8 respectively. Interestingly, although there were more trawlers in Beluran, Sandakan and Kota Marudu combined, Kudat recorded the highest average catch per unit effort for a boat (Fig. 11). This may be due to many Sandakan-registered trawlers fishing in the 'TMP waters', and landing their catch in Kudat, whereas Beluran-registered trawlers landing their catch in Sandakan (see Tables 2 & 3).

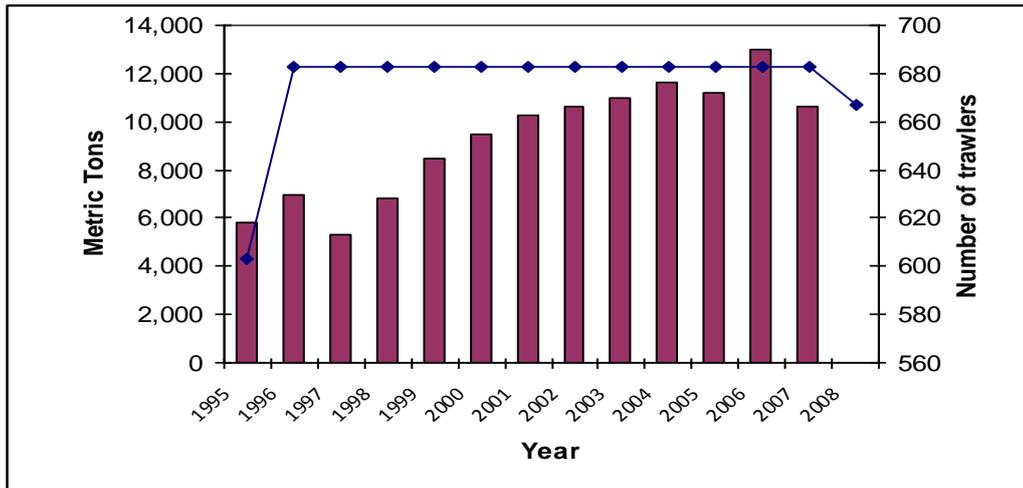
A trend analysis of total landings of trawled fishes (including non finfishes and marine invertebrates) by specific trawler fleet size for the four districts for the same period (1995-2008), indicates the importance of both Sandakan and Kudat as the major fish landing ports within the ECFZ (Fig. 12). For Sandakan, most of the catches were contributed by trawler size 10-24.9 GRT, whereas for Kudat, catches were contributed by bigger sized trawlers (25-39.9 GRT).

However, all four districts showed a decline in catches, with Kudat showing the most drastic reduction in landings, i.e. from over 20,000 mt in 1999 to only around half this volume (11,343 mt) in just two years (2001). The total catch for Kudat was only 4,807 mt (2007 data). Catches for Beluran and Kota Marudu were almost negligible compared to Kudat and Sandakan, i.e. a combined catch of less than 10% of Kudat and Sandakan catches (Fig. 12). On the other hand, Sandakan has caught up with Kudat, with annual landings of around 10,000 mt for the last 8 years (2000-2007), and reaching a peak of 13,025 mt in 2006. In fact, the commercial (trawl and purse seine) catches of Sandakan in the past decade have been more or less 'constant', contrary to the report by Gassner (2009) (see Chapter 5 for details of purse seine fishery).

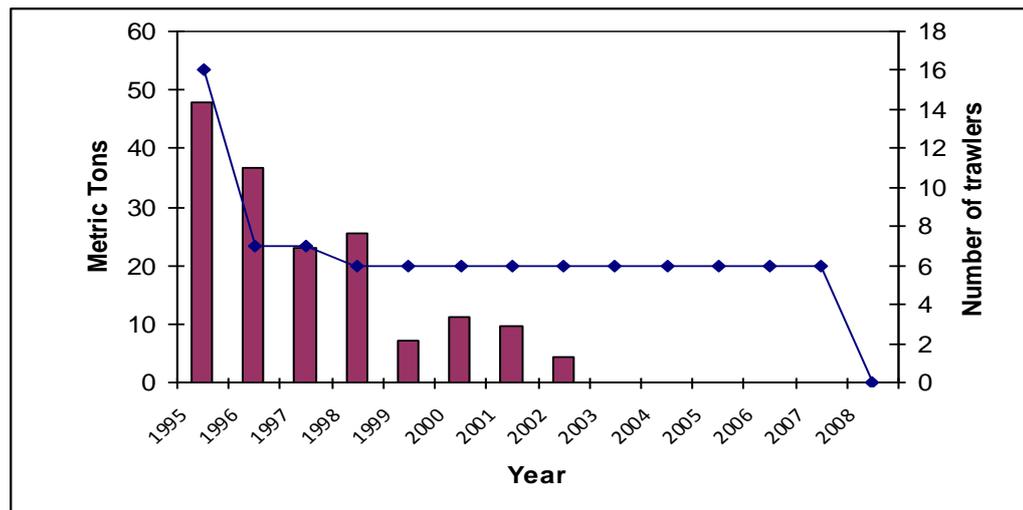
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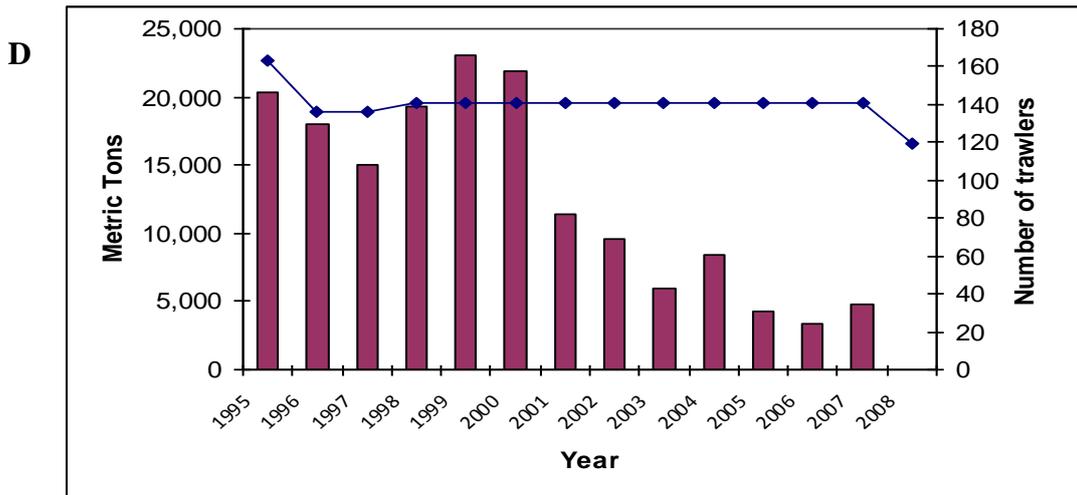


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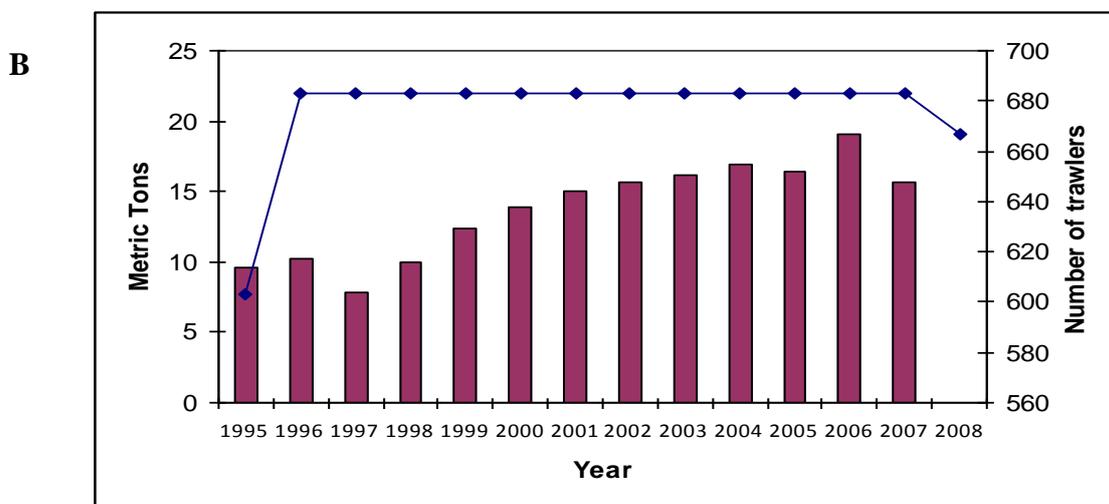
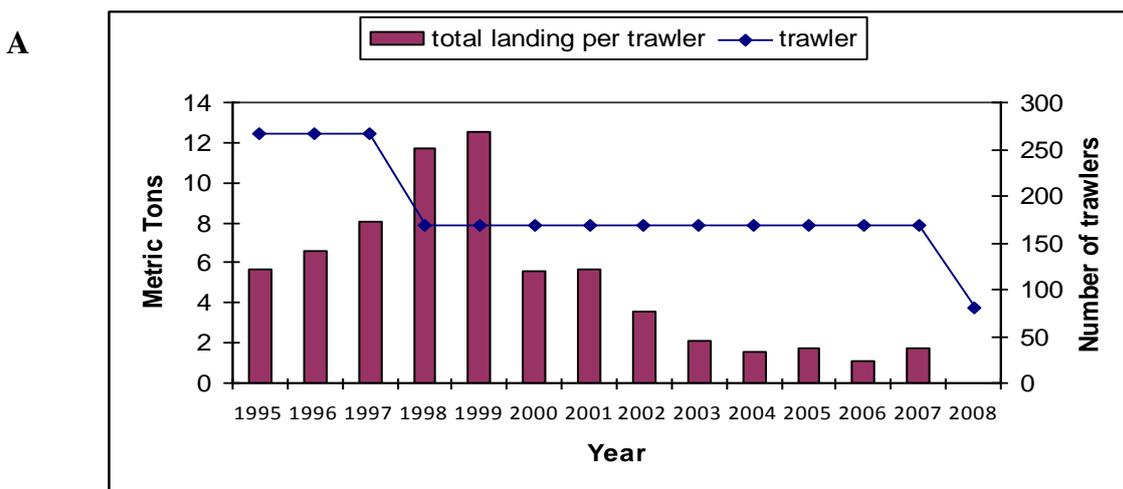


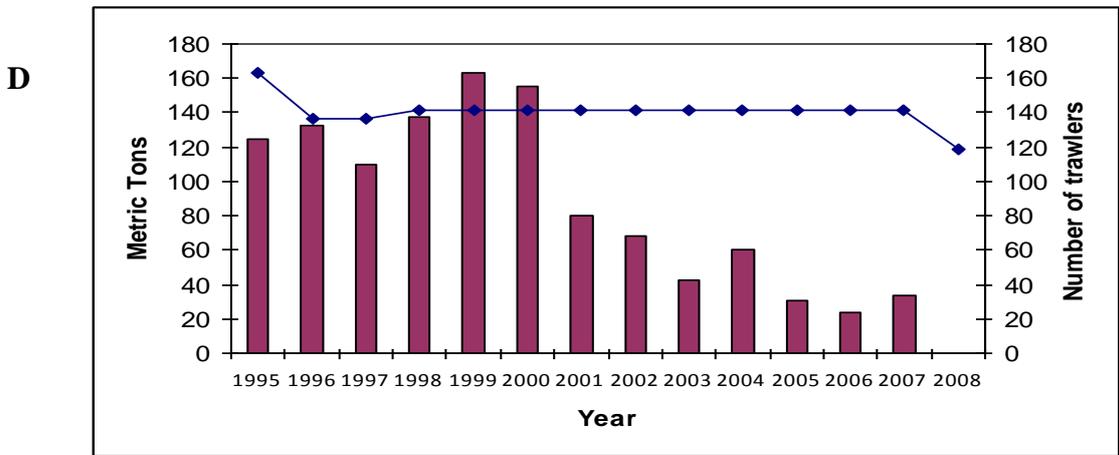
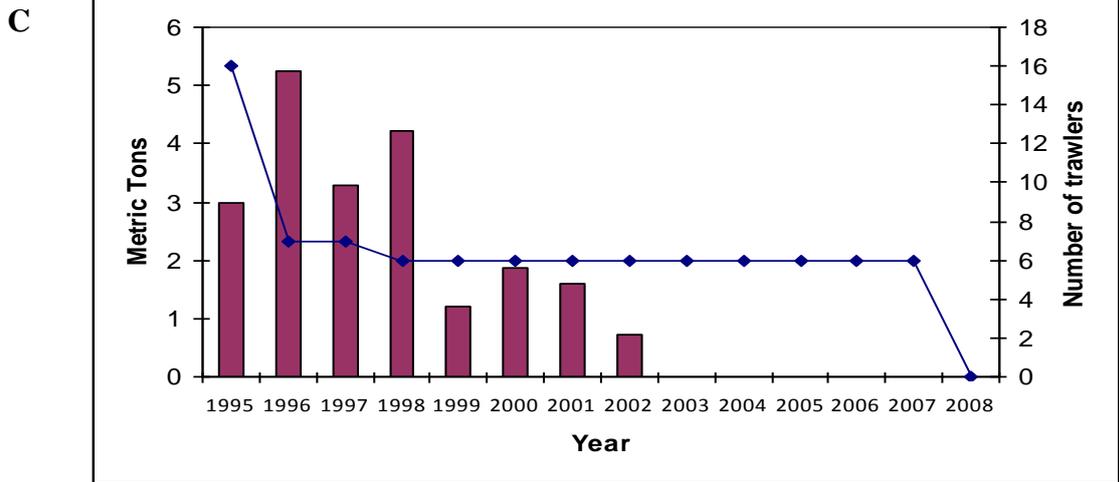
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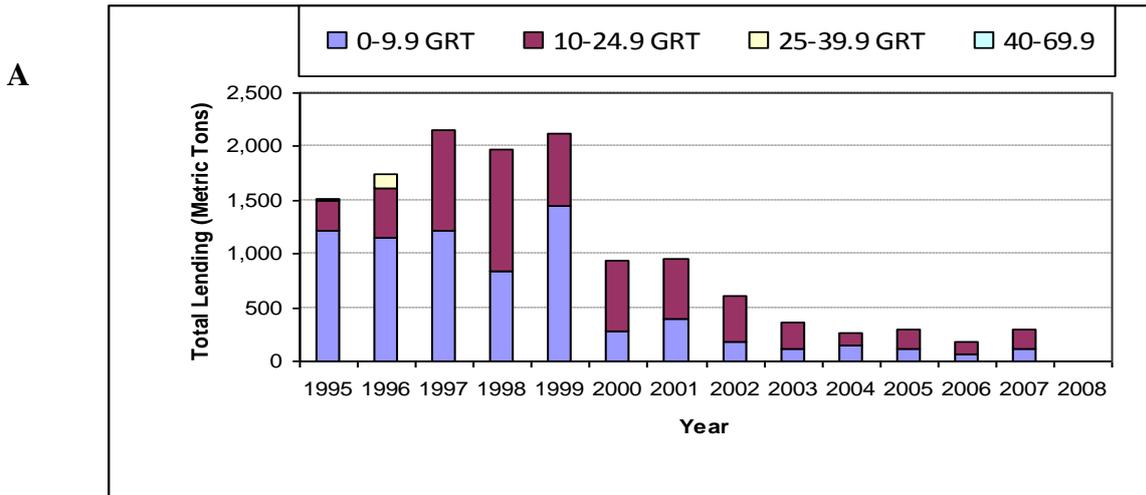


**Figure 10.** The relationship between total catch and number of trawlers (1995-2008). A- Beluran; B- Sandakan; C- Kota Marudu; D- Kudat.

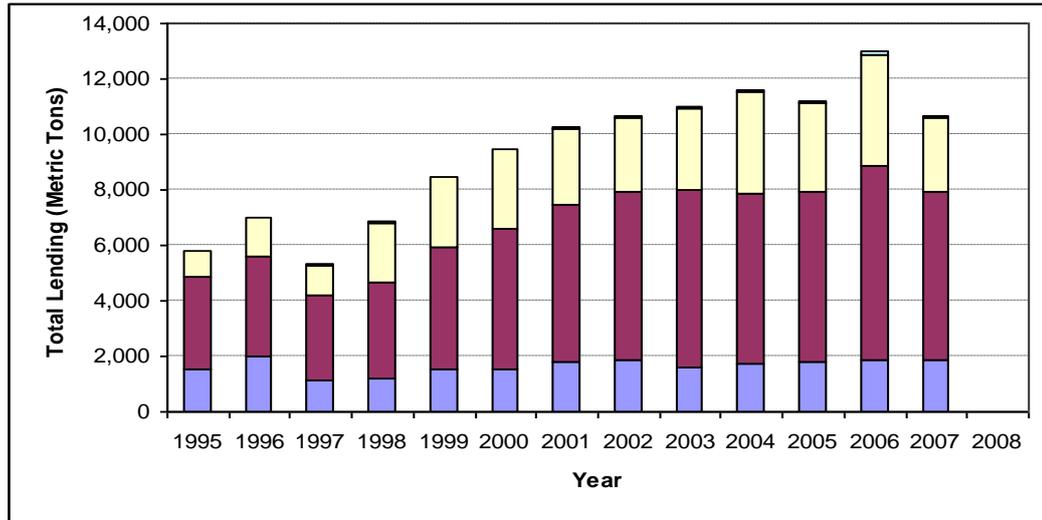




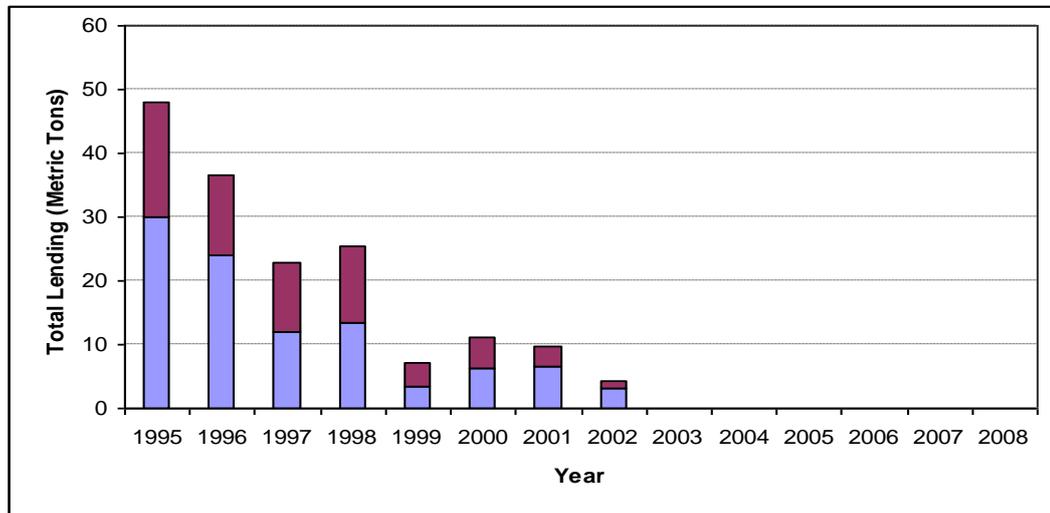
**Figure II.** The relationship between average catch per unit effort for a boat and number of fishing vessels (1995-2008). A- Beluran; B- Sandakan; C- Kota Marudu; D- Kudat.



B



C



D

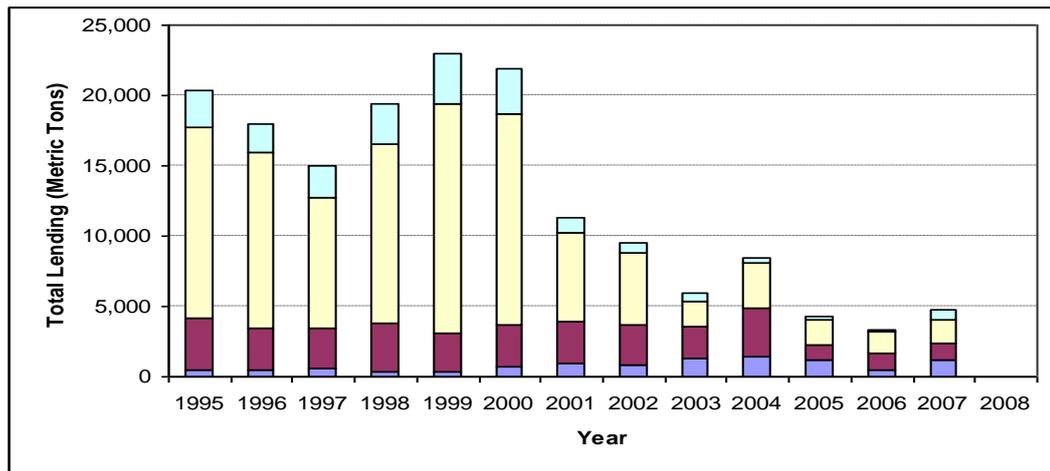
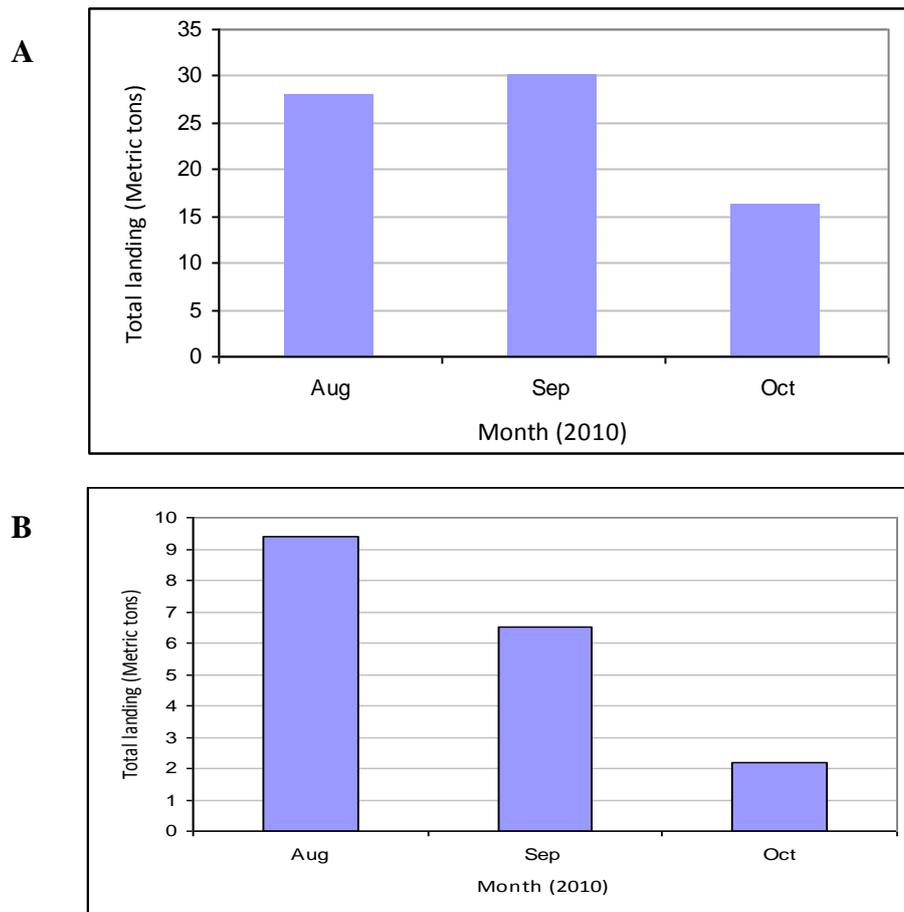


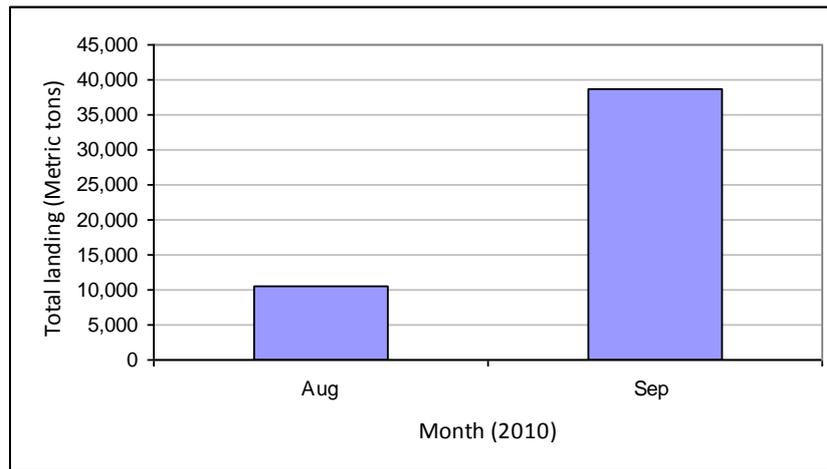
Figure 12. Catch trend of marine fish by specific trawler fleet size (1995-2008). A- Beluran; B- Sandakan; C- Kota Marudu; D- Kudat.

### 5.3 Recent catch analysis

The recent (2010) monthly Kudat trawl landings were categorised into fish and prawn trawlers (Fig. 13). Fish landings were based on 5, 7 and 3 fish trawlers, for the respective months of August, September and October whereas for prawn landings, the data was based on 7 prawn trawlers for August and September, and 9 for October. Sandakan (fish) landings were based on 20 trawlers for August and 39 for September (Fig. 14; as stated earlier, it was not possible to distinguish between the two types of trawlers).



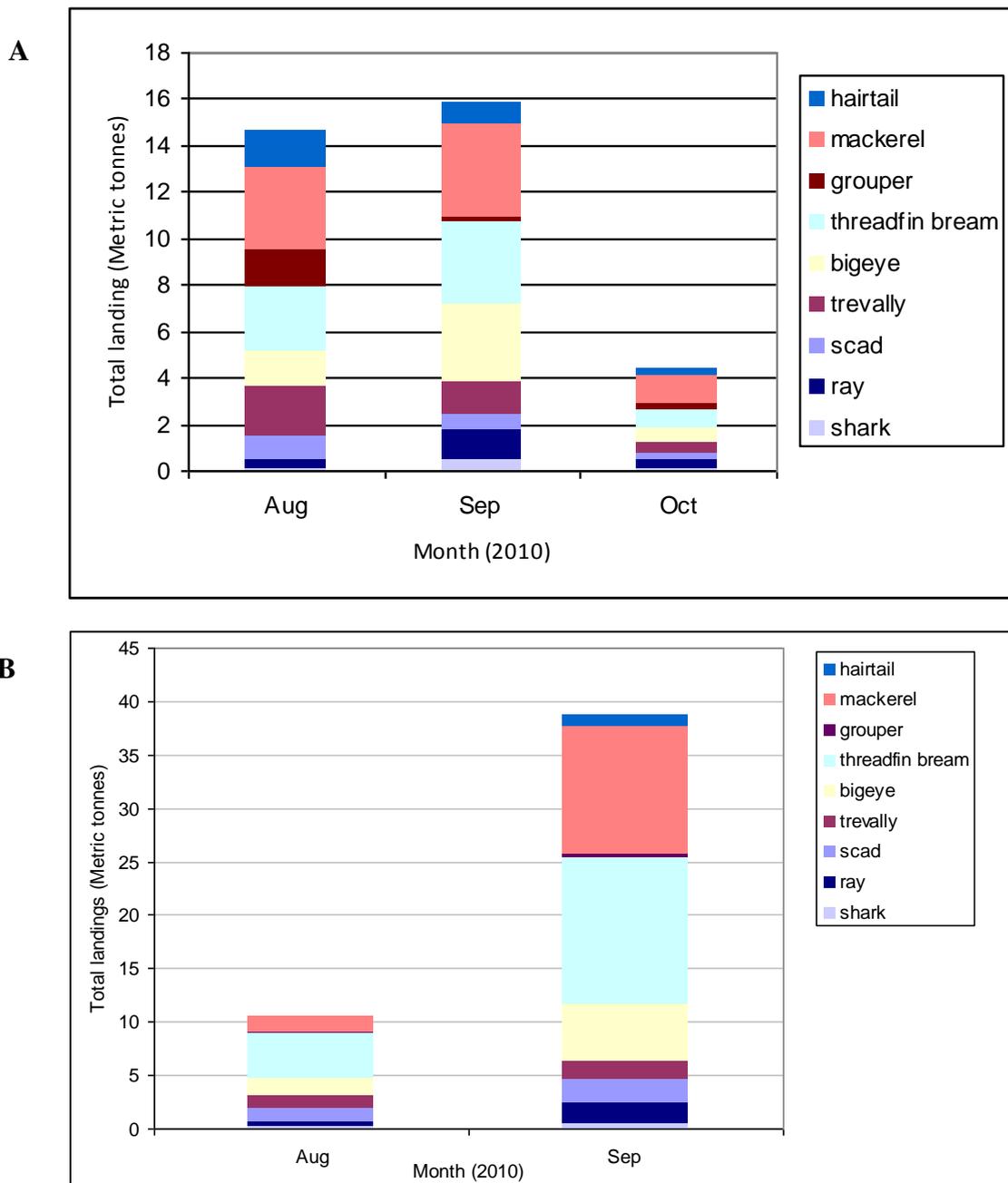
**Figure 13.** Kudat trawl landings (August, September and October 2010). A- fish trawls; B-prawn trawls.



**Figure 14.** Sandakan trawl landings of fishes (August and September 2010). Note: catch for fish and prawn landings are not differentiated as it was not possible to distinguish between the two types of trawlers).

Monthly data of recent trawl catches (collected during this study) are presented in Fig. 15. These are selected data which included a broad range of fish species, including sharks and rays, and are categorised into the following 'fish groups':

- i. sharks (yu) (*Carcharhinus* spp., Family Carcharhinidae; *Sphyrna lewini*, F. Sphyrnidae; *Chiloscyllium* spp., F. Hemiscyllidae);
- ii. rays (pari) (mainly *Neotrygon kuhlii*, and *Himantura* spp., F. Dasyatidae; *Gymnura* sp. F. Gymnuridae; *Rhynchobatus* spp., F. Rhinidae; and *Aetobatus* spp, F. Myliobatidae);
- iii. scads (tamanung) (*Atule mate*, F. Carangidae);
- iv. trevally (ikan putih) (*Carangoides* spp., F. Carangidae);
- v. threadfin breams (kerisi) (*Nemipterus* spp., and *Scolopsis* spp., F. Nemipteridae);
- vi. bigeyes (mata merah) (*Priacanthus* spp., F. Priacanthidae);
- vii. groupers (kerapu) (*Ephinephelus* spp., but mainly *E. sexfasciatus*, F. Serranidae);
- viii. mackerels (rumahan) (*Rastrelliger brachysoma*, and *R. kanagurta*, F. Scombridae); and
- ix. hairtails (langging) (*Trichiurus lepturus*, F. Trichiuridae),

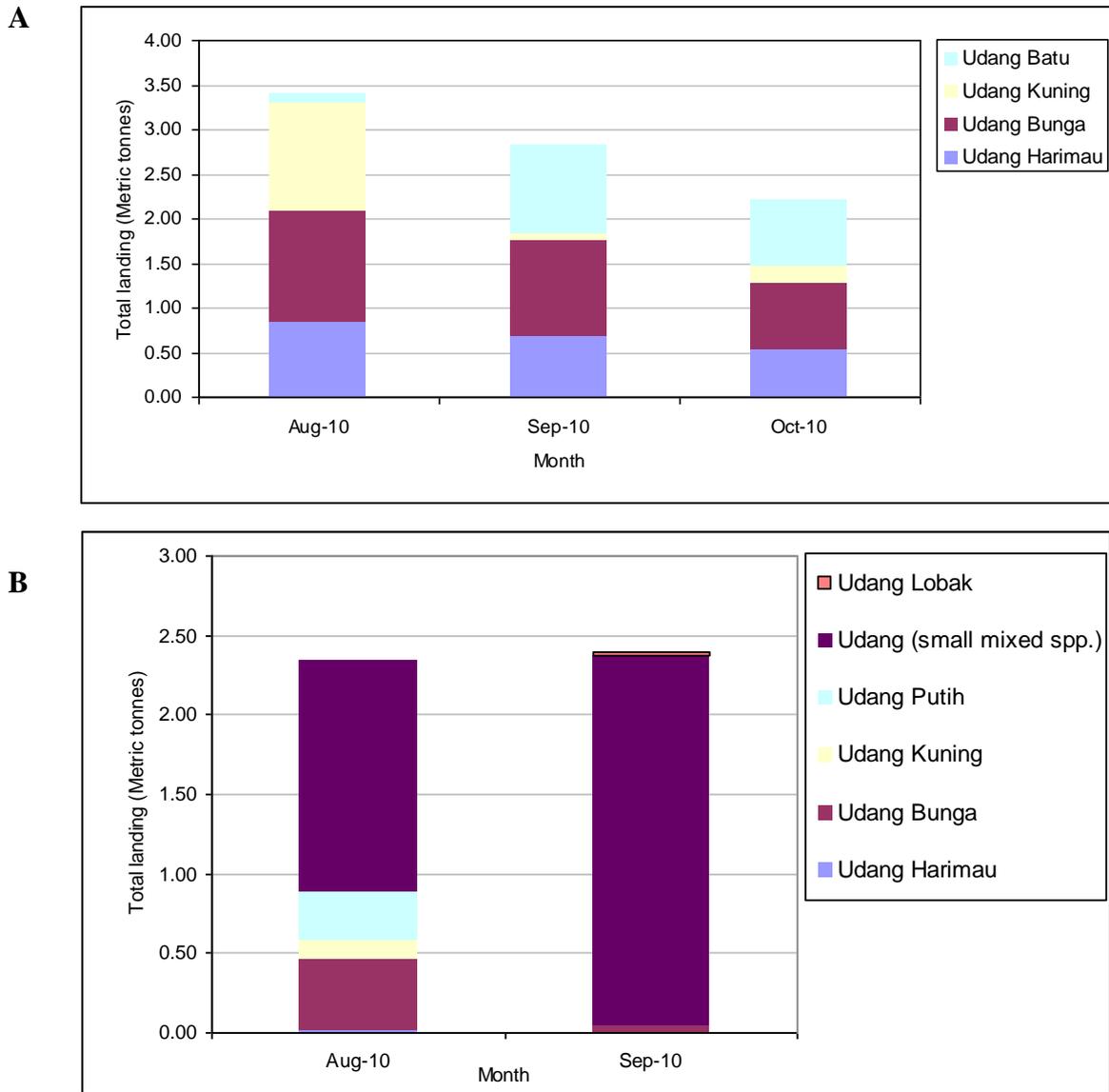


**Figure 15.** Recent catch trend of marine fish by fish trawlers. A- Kudat (August-October 2010); B- Sandakan (August-September 2010).

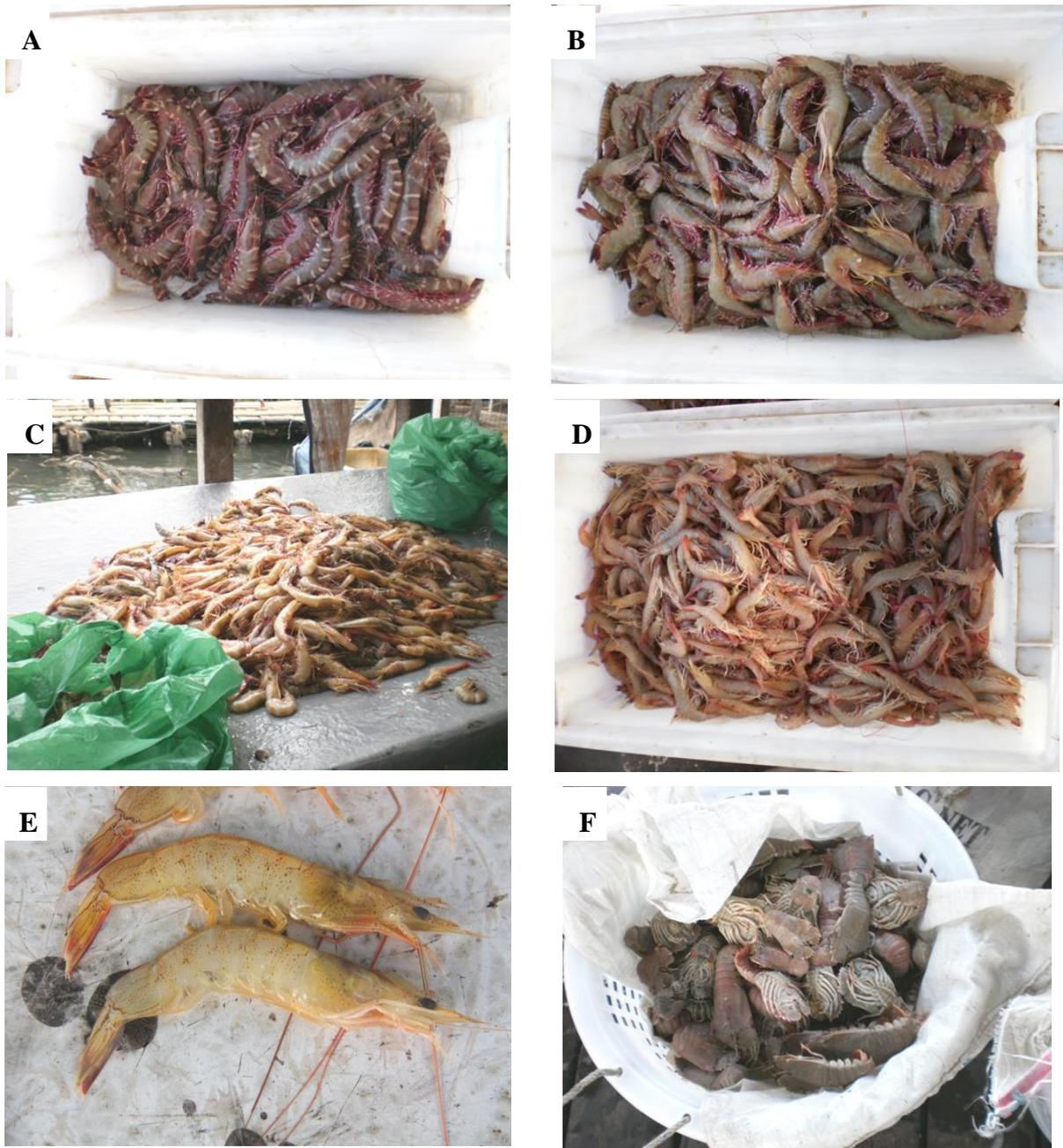
As prawns (particularly penaeid prawns) were the most important marine landings in Sabah (see also Manjaji-Matsumoto, 2007), the breakdown of prawn landings are also presented (Fig. 16). The prawns were categorized into the following ‘prawn groups’; (this grouping follows names used by the fishers):

- i. udang harimau (Fig. 17A);
- ii. udang bunga/kelawa (Fig. 17B);
- iii. udang kuning (Fig. 17C);
- iv. udang batu (Fig. 17D);

- v. udang putih/kertas (FIG. 17E); and
- vi. udang lobak/satak (F. Scyllaridae)(FIG. 17F)- Sandakan data only.



**Figure 16.** Recent catch trend of prawns by prawn trawlers. A- Kudat (August-October 2010); B- Sandakan (August-September 2010). NOTE: Sandakan catches not exclusively from prawn trawlers (see text).



**Figure 17.** Types of prawns landing. A- Udang Harimau (*Penaeus monodon*); B- Udang bunga (*Penaeus* sp.); C- Udang Kuning (*Metapenaeus brevicornis*); D- Udang Batu (*Metapenaeus* sp.); E- Udang Putih (*Metapenaeus lysianasa*); F- Udang Lobak (*Thenus orientalis*).

## 6. PURSE SEINE FISHERY

Based on the Sabah Annual Fisheries Statistics, there were two types of purse seines, i.e. fish purse seine and anchovy purse seine. Purse seine fishing operations were carried out daily at an average of 7 hours a day (5-11 hours), except for 5-7 days a month, during the full moon period where these fishing boats ceased operations.

During fishing operations, spotlights were used to attract fishes. The spotlights were fixed around the top sides of the wheel house. The purse seiner (mother boat) was usually 'assisted' by one or two smaller boats (tug boats or *anak kapal*). The tug boats also acted as 'transporter boats'; ferrying the days catch back to the mainland and bringing in daily rations for the mother boat crew. Most of the tug boats looked like purse seine boats, although one (in Sandakan) looked like a trawler. However, a scan of the tug boats' registration number revealed that none were actually on the list of 'registered purse seiner' or 'trawler' (both in Kudat and in Sandakan).

During this study, it was noted that the main components of the purse seine catch (about 90% of the total catch) were scads (basung) (*Decapterus* spp., F. Carangidae) and sardinella (kasik, tamban) (*Amblygaster* sp. *Dussumeria* sp., F. Clupeidae) rather than anchovies (bilis) (F. Engraulidae) (see Fig.18). The remaining 10% of the catch included miscellaneous teleosts and large invertebrates i.e. squids and octopuses. Therefore, for the purpose of documentation in this study, all the purse seiners were assumed to be 'fish purse seine' (*pukat jerut ikan*).



**Figure 18.** Types of fish caught in purse seine. A- shortfin scad (basung) (*Decapterus macrosoma*); B- spotted sardinella (kasik) (*Amblygaster sirm*).

## 6.1 Number of fishing boats

In Kudat, of the 18 purse seiners listed (based on 2010 data; Appendix 2), only 17 were observed. However, a few of the 17 observed were not on the list provided by the DOF. The observed boats were registered to 7 names comprising of 2 companies and 5 individuals (Table 4).

**Table 4.** List of purse seiners observed at Kudat landing ports (August – October 2010)

No.	Registration number	Registered owner
1	KT 7/F	Fook Soon Seafood Product Sdn. Bhd.
2	SKD 00066	Fook Soon Seafood Product Sdn. Bhd.
3	KT 16/F	Fook Soon Seafood Product Sdn. Bhd.
4	KT 2/F	Fook Soon Seafood Product Sdn. Bhd.
5	KT929/F	Siong Ann Trawler Sdn. Bhd.
6	KT 6818/F	Siong Ann Trawler Sdn. Bhd.
7	KT 829/F	Siong Ann Trawler Sdn. Bhd.
8	KT 39/F	Chang Mook Shoi & Chang Mook Shui
9	SN 323/F	Chang Mook Shoi & Chang Mook Shui
10	KT 50/F	Chong Chi Kong
11	KT 818/F	Chong Chi Kong
12	KT 6808/F	Chong Chi Kong
13	KT 4389/F	Chong Chi Kong
14	KT 2353 F	Chong Chi Kong
15	KT 188/F	Lee Chin Ann
16	KT 6638/F	Lu Kon Hee
17	KT 3988/F	Tay Kim Sing & Tay Kai Sing

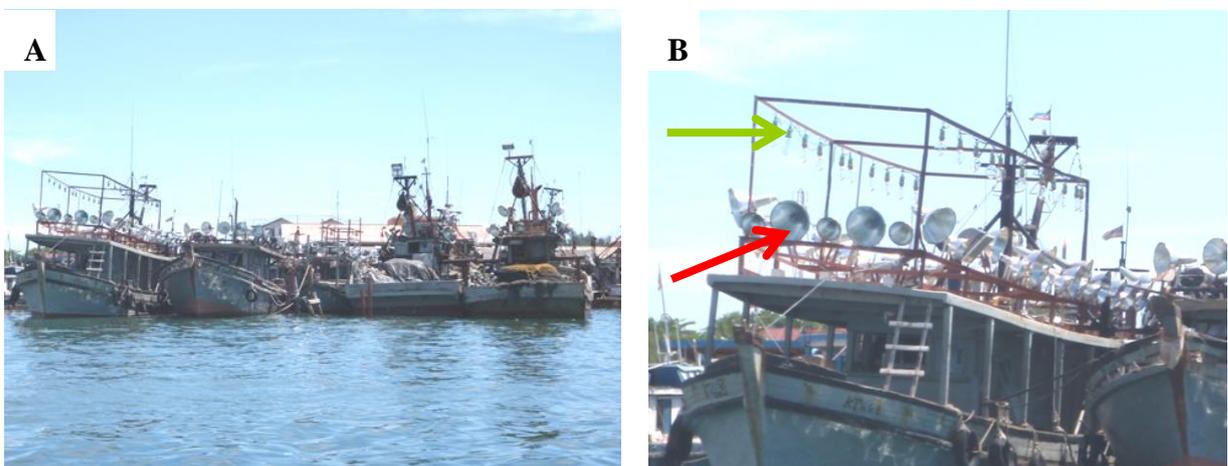
In Sandakan, only two purse seiners were observed at dock (Table 5). Otherwise, several tug boats of purse seiners were observed at several of the landing ports. However, none of these were on the list of ‘registered purse seiner’ or ‘trawler’ (both in Kudat and in Sandakan).

**Table 5.** List of purse seiners observed at Sandakan landing ports (September 2010)

No.	Registration number	Registered owner
1	SBF 16	Unknown
2	SSK 00119	Unknown

## 6.2 Light intensity of purse seine fishing boats

As mentioned in the Introductory chapter (see p.2), one of the concerns among stakeholders within the TMP, was the modification of purse seine fishing boats by the fleet owners through the installation of many high wattage spotlight bulbs. The concern was that such modified fleet would be unsustainable for the fisheries resources. Indeed, during this study, we observed that all purse seine fleet were fitted with numerous spotlights (Fig. 19). It was noted that even the tug boats (of a purse seiner) were installed with spotlights. (A purse seine ‘mother’ boat can have anywhere between 1 and 3 tug boat which accompanies the mother boat during fishing operations). Two most commonly used types were the rectangular- and round-shaped spotlight. A third (less common) type of spotlight was the ‘suspended’ or ‘dangling’ type.



**Figure 19.** Example of purse seiners fitted with high wattage spotlight bulbs (Kudat). A- a fleet of four purse seiners (note all three types of spotlights are observed); B- close up of a purse seine with round-shape (→) and suspended (→) spotlight.

Data on the intensity of lights (i.e. spotlight data) used on a purse seine fishing boat for ten purse seiners in Sandakan and Kudat, is shown in Table 6. There were three different intensities of the spotlight bulb used, i.e. 400, 1000 and 2000 watts. The number of spotlights on a mother boat ranged between 21-62 units, although the number of spotlights installed did not necessarily correspond to the size (GRT, Gross Tonnage) of the boat.

**Table 6.** Light intensity of purse seiner boats and the respective tug boats (August & September 2010)

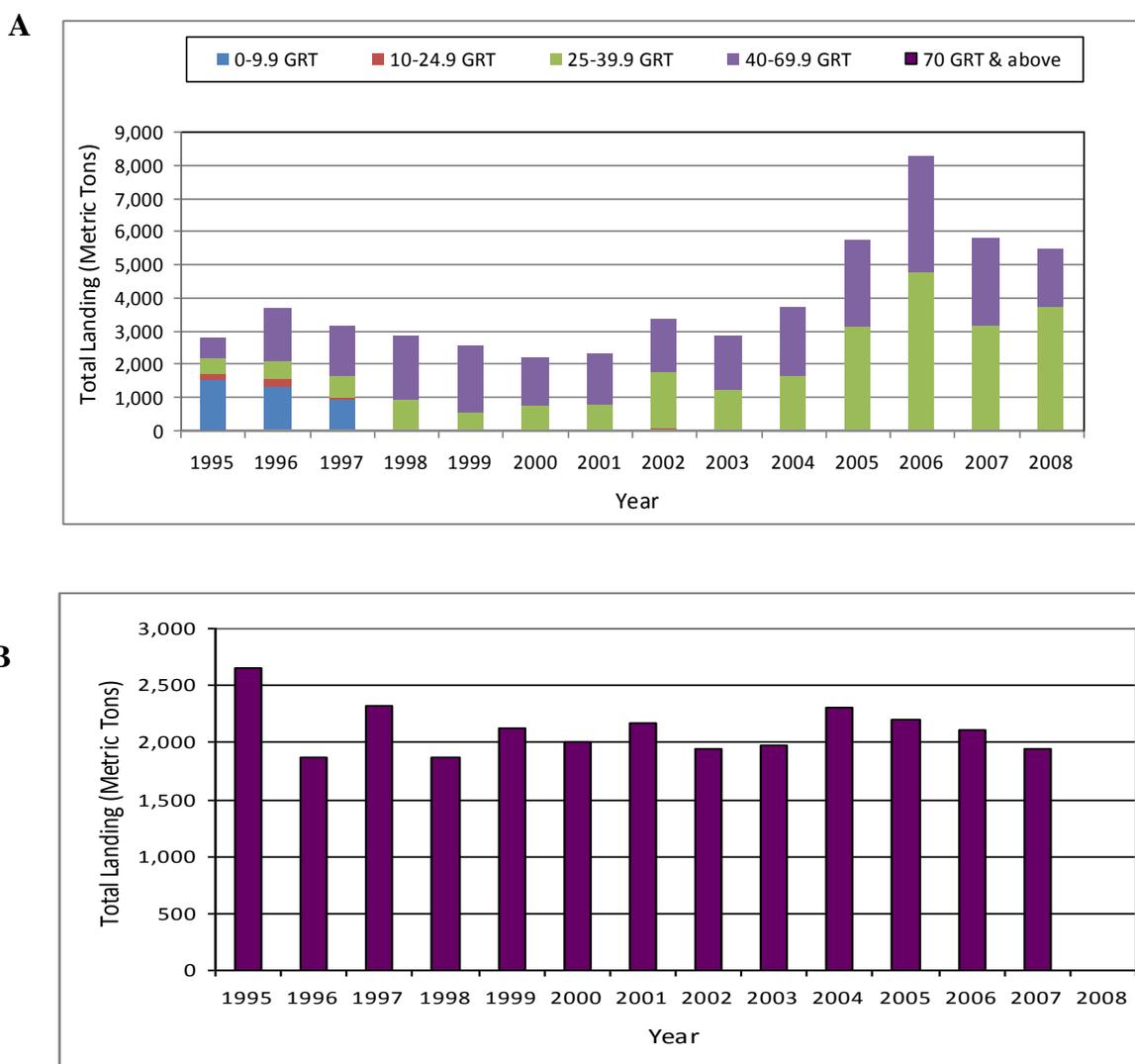
	1	2	3	4	5	6	7	8	9	10	11	1	2
Date:	19-Aug	19-Aug	21-Aug	21-Aug	21-Aug	21-Aug	21-Aug	21-Aug	21-Aug	21-Aug	23-Aug	Sep	Sep
Boat registration number:	KT 7/ 3F	KT 50/ F	KT 2/ F	KT 16/ 3F	KT 6811/ F	KT 39/ F	KT 3988/ 3F	KT 6808/ F	KT 188/ F	KT 818/ 3F	KT 929/ 3F	SBF 16	SSK 00119
Boat location: A- Kudat (Angkasa lama); B- Kudat (Angkasa Baru); C- Sandakan (Widegrowth); D- Sandakan	A	B	A	A	A	A	B	B	A	B	A	C	D
Body type (wood/ fibreglass/ steel):	fibreglass	wood	wood	wood	wood	wood	wood	wood	wood	fibreglass	wood	wood	unknown
Boat size (GRT):	39.74	38.7	51.27	38.08	37.7	51.27	39.42	39.84	38.22	19.32	49.25	>70	35.28
Boat dimension:													
Length (feet):	80	59	65	68	54	57	70	70	67	39	80	25m	?
Width (feet):	24	14	25	17	17	17	16	18.5	17	13	18	5m	?
Height (feet):	8	8	15	7	7	17	7	7	6	5	7	7m	?
No. of spotlights (units):													
400 watt	8	20	6	20	-	-	13	16	10	44	10	26	48
1000 watt	12	12	20	10	18	11	10	12	20	10	10	21	4
2000 watt	20	14	16	8	16	10	8	8	10	8	10	24	24
Total lights:	40	46	42	38	34	21	31	36	40	62	30	71	76
No. fishing operations (days per month):	23	24	24	22	21	21	24	22	23	28	24	30	?
Estimated operations (hours per day):	8	6	11	8	5	8	7	8	6	5	6	3	?
No. boats during fishing operations:	3	3	3	3	*	*	*	*	*	*	3	3	?
Tug boats:													
Boat 1:	KT 2100	KT 873/ F	KT 15	KT 1	*	*	*	*	*	*	KT 638/ F	SN	*

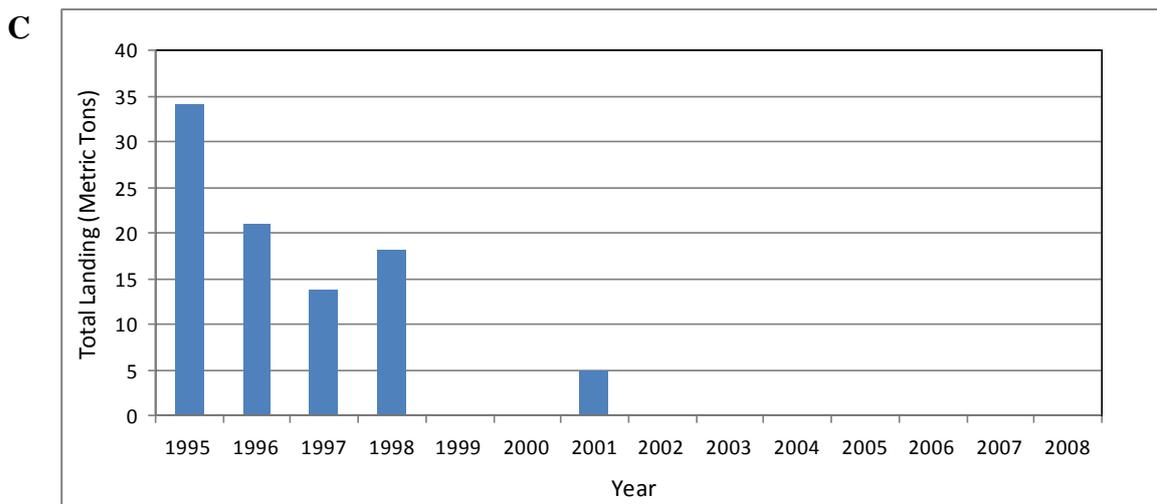
												311/4F		
No. of spotlights (units):														
400 watt	6	4	*	*								-	*	
1000 watt	20	26	*	*								18	*	
2000 watt	4	15	*	*								4	*	
Total lights:	30	45	20	20								22		
<u>Boat 2:</u>	KT 67	KT2353/ F	KT 21	KT 44	*	*	*	*	*	*		KT 4549/ F	3	*
No. of spotlights (units):														
400 watt		8	*									9	0	
1000 watt	6	8	*	*								7	14	
2000 watt	4	8	*	*								11	18	
Total lights:	10	24	20	30	*	*	*	*	*	*		27	32	*

\* Data unavailable as the particular boat was not seen at any landing port for direct observation.

### 6.3 Catch trend analysis

The catch trend analysis (1995-2008) of fishes (including non finfishes and marine invertebrates) caught by purse seiners for three districts (Kudat, Sandakan and Kota Marudu) within the ECFZ are shown in Fig. 20. Apparently, there was no purse seine fleet registered in Kota Marudu although landings were recorded (in 1995-1998, and in 2001). Beluran and Pitas also both did not have any purse seine fleets registered there, or any purse seine landings in these two districts. For both Sandakan and Kudat, the number of purse seiners remained unchanged at 5 and 9, respectively, over the period 1995-2007 (2008 data not available). Note that the data analyses were only that of 'fish purse seine', and did not include 'anchovy purse seine' or 'other' seine nets (not specified).





**Figure 20.** Catch trend of marine fish by purse seiners (1995-2008). A- Kudat; B- Sandakan; C- Kota Marudu. Note: Sandakan data for 2008 not available.

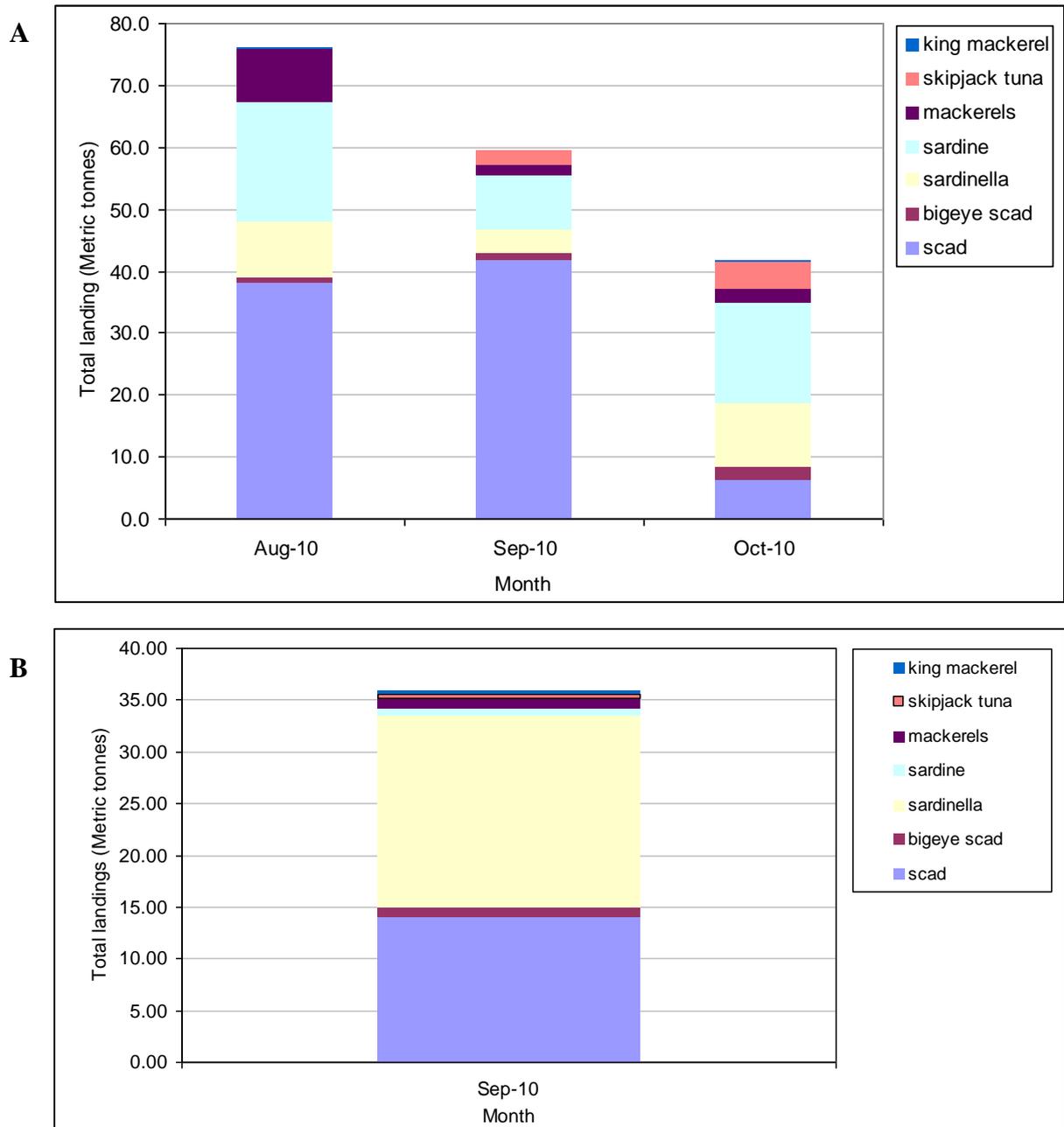
The data shown in Fig. 19 again indicates the importance of both Kudat and Sandakan as the major fish landing ports within the ECFZ. Catches for Kota Marudu were almost negligible compared to Kudat and Sandakan, i.e. catch was less than 1% of Kudat and Sandakan catches. Kudat catches showed an initial ‘recovery’ after an initial reduction since 1997, but again decreased beginning 2007. As for Sandakan, the annual catches averaged at around 2,000 mt annually, with signs of decrease beginning 2005. It was noted that all Sandakan purse seiners were of the largest size range ( $\geq 70$  GRT) only. Kudat purse seiners were of sizes 0-9.9GRT, 25-39.9 and 40-69.9 GRT, of which the major contribution to catches here was by purse seine size 40-69.9 GRT.

#### 6.4 Recent catch analysis

Monthly data of recent purse seine catches (collected during this study) are presented in Fig. 21. Theselected data included a broad range of fish species, and are categorised into the following ‘fish groups’:

- i. scads (basung) (*Decapterus* spp.), and bigeye scads (tulai) (*Rastrelliger* spp.) (Family Carangidae);
- ii. sardinella (tamban), and sardine (kasik) (Family Clupeidae); and
- iii. mackerels (rumahan), skipjack tuna (bakulan) and king mackerel (tenggiri) (Family Scombridae).

The fish landings for Kudat were based on 5, 7 and 3 boats for the respective months of August, September and October. For Sandakan, landings were based on 4 boats only (September).



**Figure 21.** Recent catch trend of marine fish by purse seiners. A- Kudat (August-October 2010); B- Sandakan (September 2010).

## 7. FISHERIES ASSESSMENT

### *The commercial trawl and purse seine fisheries*

The commercial fishing gears used in Sabah, as listed in the Sabah Annual Fisheries Statistics, were trawl nets, seine nets and gill nets. As gill net fishing is more selective, it is considered a more sustainable fishing method. Moreover, total landing by gill netting was much less than the total landings of trawling and purse seining. For comparison, the breakdown of Sabah's total fishing landing by commercial gear type: trawl nets 45% (65,055 mt), purse seine nets 44% (63,483 mt) and gill nets 11% (15,602 mt) (DOF, 2007).

On the matter regarding Beluran- and Sandakan-registered trawlers observed operating in the Mandi Darah-Tigabu area, there was a general feeling of discontentment among Kudat-registered fishers who considers the former as 'trespassers'. But the fact is that the waters between Kudat and Sandakan are considered as one (same) fishing zone (i.e. the ECFZ) by the State government (represented by the Sabah Department of Fisheries). Therefore, as far as the government is concerned, Beluran- and Sandakan-registered fishing fleets can freely fish within this Zone, except for the stipulated restricted no-fishing zones. Nevertheless, another reason for Kudat-registered fishers wanting to prohibit 'outsiders' from fishing within their 'backyard' was likely the sheer number of outside (non-Kudat-registered) fishing boats that they would have to compete with, especially Sandakan-registered fleets (see Fig. 10).

The activity of changing fish nets, as reported in Kudat is probably occurring in other districts in Sabah. Such tamperings are bound to affect the data generated for fisheries statistics. Moreover, the Chairman of the Sandakan Fisheries Association in an interview revealed that it was common for the Malaysian registered fishing boats to fish beyond the territorial waters along the ECFZ, as well as purchase (at sea, in international waters) prized marine catches such as high-grade prawns from neighbouring Filipino fishers.

### *Fish landing infrastructure*

Overall, the actual number of commercial fishing boats was fewer than that in the list provided by the DOF. The number of trawlers in operation was more than the number of purse seiners. However, many of the observed boats were not found on DOF's list of licensed registered boats. For example, the individual Mr. Lu Kon Hee was not on the DOF's list (neither trawl nor purse

seine register). Sandakan had many more fishing boats than Kudat and the fish landing ports were busier in the former. Unfortunately this made data recording more difficult. Moreover, a majority of the boat 'towkays' actually prevented survey team members from recording the fish landings and they were not willing to share their catch data. Even in Kudat, where the initial response towards this survey was more 'receptive', after two months of continued daily data collection, a few of the boat owners were beginning to show 'hostility' towards the data collectors, with some even refusing to cooperate (prevented entry to their premises - the private jetties - during landings). Apparently, some of the fishing companies later revealed their 'concern' that the landings data collected from their boats during this study would end up with the 'Income Tax Department'.

Moreover, the landing ports were mostly owned and operated by a few large private companies that control the fisheries industry. Apparently, the issue of increased use of spotlights in purse seiners had 'spiralled out of control' due to a combination of factors from both sides, i.e. the government (DOF) and the private sector (boat owners/private companies). The private sector appeared to have taken the liberty to undertake extensive modifications on their fishing boats in the absence of a standard guideline for commercial fishing fleets. Therefore, to protect their 'investments', they were resisting (proposed) new guidelines for commercial fishing fleets, including the regulation on the maximum light intensity per fishing boat, and were even seeking compensation from the government.

### ***The commercial trawl and purse seine fish landings***

In Kudat, as in Kunak (small coastal town in southeast Sabah), most (80%) of the landings were immediately loaded onto waiting trucks and transported out of town (pers. observations by senior author, this study Aug-Oct 2010; Fig. 22); thus the small and relatively 'quiet' fish markets in these 'outback' towns were not reflective of the commercial fishing activities and volumes landed of marine landings that were going on there.



**Figure 22.** Two deck workers carrying a crate of grade 'AAA' Tiger prawn/ Udang Harimau *Penaeus monodon* off a prawn trawler. Note the size of an individual prawn, which is almost the size of each of the mens' fore arm. This and several other crates with similar contents were uploaded onto a waiting pickup truck after being quickly weighed on the jetty. Location: Esplanade jetty, Kudat (August 2010).

## 8. CONCLUSION AND RECOMMENDATIONS

The fishing industry of Sabah is very lucrative and considerably still productive (based on field observations carried out between August and December 2010). However, regulation of the fishing activities and operations at best can be described as weak. Some of the main concerns are the country of origin of some fish (including non finfishes and invertebrates) landings (e.g. in Sandakan), as well as underreporting of catches. On the other hand, although there are concerns with the sustainability of the current fisheries resources, subsidies in various forms continue to be given, with emphasis to 'non-commercial' or traditional fishers. As we observed during the field surveys, there was also no control over the size of fishes landed. As an example, the prawns shown in Fig. 21 were very likely the broodstocks which should not have been caught and landed in the first place. The landings of such large-sized prawns were an indication that no fishing zones, i.e. areas within 3 nm along the coastal mangrove ecosystem which are the breeding grounds of the prawns, have been encroached.

While we acknowledge the complications of managing a mixed-fisheries (multi-species and multi-gear), there are ways to improve current fisheries management efforts. Moreover, the decision by the government to gazette the TMP provides many opportunities for such a purpose. Basically, we recommend that within the TMP there should be no-fishing zones as well as restricting the type of fishing gear to a certain zone. We also recommended that since the boundary of the TMP will be very clear, only Kudat-registered commercial fleets will be allowed to fish within this boundary, and that the landings must be made in Kudat fish landing ports. As for the existing commercial fishers, particularly the Beluran- and Sandakan-registered, the owners should be given a choice of whether to re-register their fleet in Kudat and continue fishing within the TMP only or retain their current fleet registration, but are prohibited from entering the TMP. To avoid the influx of commercial fleets operating within the TMP as well as ensure the sustainability of the capture fisheries industry, there should also be a limit on the number of fishing licences. This could be done through further studies (e.g. fisheries carrying capacity in the TMP) while continuing stakeholder discussions in the process.

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## 10. APPENDICES

**Appendix IA.** The full list of Sabah DOF-registered trawlers in Kudat/Banggi area (source: Sabah Department of Fisheries, Kudat Office, 2010).

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
1	KT 3545/F	HO NYUK TYAN	P.UDANG	TIDAK MENGGUNAKAN RSW
2	KT 858/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
3	SN 61/F	HANG HUI YUAN	P.IKAN	TIDAK MENGGUNAKAN RSW
4	KT 3278/F	CHUNG KUI HIONG	P.UDANG	TIDAK MENGGUNAKAN RSW
5	KT 890/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
6	KT 567/F	FLORENCE CHONG GUATHIONG	P.IKAN	TIDAK MENGGUNAKAN RSW
7	SJN 00760F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
8	KT 5/F	PUAN MANGUARIAS BINTI MAGUNTAN	P.IKAN	TIDAK MENGGUNAKAN RSW
9	KT 88/F	SIONG ANN TRAWLER SDN.BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
10	KT390/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
11	KT 90/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
12	KT 8/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
13	KT 989/F	SAW SENG ENG	P.IKAN	TIDAK MENGGUNAKAN RSW
14	KT 96/F	HIEW YUN FOH	P.IKAN	TIDAK MENGGUNAKAN RSW
15	KT 2561/F	CHUNG KUI HION	P.UDANG	TIDAK MENGGUNAKAN RSW
16	SN 181/F	DAINEL KINSIK	P.UDANG	TIDAK MENGGUNAKAN RSW
17	KT 95/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
18	KT389/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
19	SKD00003/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
20	KT 3232/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
21	KT 555/F	CHANG KIN WING	P.IKAN	TIDAK MENGGUNAKAN RSW
22	KT 289/F	SIONG ANN TRAWLER SDN.BHD	P.UDANG	MENGGUNAKAN RSW
23	KT 592/F	JUBAIRA BT AMIL HASSAN	P.UDANG	TIDAK MENGGUNAKAN RSW
24	ss	JUBAIRA BT AMIL HASSAN	P.UDANG	TIDAK MENGGUNAKAN RSW
25	KT 597/F	MUHAMUD BIN ALPAH	P.IKAN	TIDAK MENGGUNAKAN RSW
26	KT 98/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
27	KT 80/F	LO KOON FOOK LO CHUN KONG	P.IKAN	TIDAK MENGGUNAKAN RSW
28	KT10/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
29	TB 654/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
30	KT 1361/F	SALEH BIN BARI	P.UDANG	TIDAK MENGGUNAKAN RSW
31	kt 172/f	CHUNG VUI SOON	P.UDANG	TIDAK MENGGUNAKAN RSW
32	KT 95/	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
33	SN 1567/F	WALUN BIN DAHALAN	P.UDANG	TIDAK MENGGUNAKAN RSW
34	KT 61/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
35	KT 3569/F	KONG FUNG MEE	P.UDANG	TIDAK MENGGUNAKAN RSW
36	KT 895/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	MENGGUNAKAN RSW
37	KT 3613/F	ASPAR BIN ABTAR	P.IKAN	TIDAK MENGGUNAKAN RSW
38	KT 3883/F	GISAN BIN DASAN	P.UDANG	TIDAK MENGGUNAKAN RSW

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
39	kt 92/f	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
40	kt 97/f	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	MENGGUNAKAN RSW
41	KT 135/F	JUBAIRA BT AMIL HASSAN	P.UDANG	TIDAK MENGGUNAKAN RSW
42	KT 1999/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
43	KT 3018/F	ABDULLAH BIN ABDUL HAMID	P.UDANG	TIDAK MENGGUNAKAN RSW
44	SN 165/F	HO NYUK TYAN	P.UDANG	TIDAK MENGGUNAKAN RSW
45	SN 900/F	DAINEL BIN KINSIK	P.UDANG	TIDAK MENGGUNAKAN RSW
46	SN 100/F	SIONG ANN TRAWLER SDN.BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
47	SN 88/F	GAYA FISIHING SDN.BDH	P.UDANG	TIDAK MENGGUNAKAN RSW
48	KT 9/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
49	KT 889/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
50	SN 97/F	TSEN SIAU JIN	P.UDANG	TIDAK MENGGUNAKAN RSW
51	SN 5259/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
52	SN 59/F	HO NYUK TYAN	P.UDANG	TIDAK MENGGUNAKAN RSW
53	KT 898/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
54	KT 399/F	NORASIKIN BT MUHD ALI	P.UDANG	TIDAK MENGGUNAKAN RSW
55	KT 688/F	LEE KWEN LEONG	P.IKAN	TIDAK MENGGUNAKAN RSW
56	KT 1330/F	LIM LEN SHIN	P.UDANG	TIDAK MENGGUNAKAN RSW
57	KT 747/F	SIONG ANN TRAWLER SDN.BHD	P.UDANG	MENGGUNAKAN RSW
58	KT 988/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
59	KT 89/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
60	KT 115/F	LEE YUK YUEN	P.UDANG	TIDAK MENGGUNAKAN RSW
61	KT 436/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
62	KT 3289/F	CHANG MOOK SHOI CHANG MOOK SHUI	P.IKAN	TIDAK MENGGUNAKAN RSW
63	KT 996/F	HIEW YUN FOH	P.IKAN	TIDAK MENGGUNAKAN RSW
64	KT 1448/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
65	SN 309/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
66	SN 1318	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
67	KT 3295/F	LATIP BIN MOHD ALI	P.UDANG	TIDAK MENGGUNAKAN RSW
68	KT 1998/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
69	KT 86/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
70	KT 298/F	SIONG ANN TRAWLER SDN.BHD	P.UDANG	MENGGUNAKAN RSW
71	KT 28/F	LEE KIAU WUI	P.IKAN	TIDAK MENGGUNAKAN RSW
72	KT 3990/F	MOHD AMIN BIN ISMAIL	P.UDANG	TIDAK MENGGUNAKAN RSW
73	KT 22/F	GAYA FISIHING SDN.BDH	P.IKAN	TIDAK MENGGUNAKAN RSW
74	SN 809/F	ANGKASA[SABAH]SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
75	SKD 00003/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
76	SN 893/F	ANGKASA[SABAH]SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
77	KT 596/F	RASID BIN LANUDDIN	P.UDANG	TIDAK MENGGUNAKAN RSW
78	KT 18/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
79	BN 223/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
80	SN769/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
81	SN1663/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
82	SN6169/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
83	SN6212/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
84	SN1055/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
85	SN 269/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
86	SN 4732/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
87	SN 10/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
88	SN 4759/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
89	SN 4462/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
90	BN 128/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
91	KT N2233/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
92	SN 720/4F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
93	SN 5938	HANG HUI YUAN	P.IKAN	TIDAK MENGGUNAKAN RSW
94	SN 392/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
95	SN 5078/F	HANG HUI YUAN	P.UDANG	TIDAK MENGGUNAKAN RSW
96	SN 981/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
97	KT 1/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
98	SN 5086/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
99	SN 7/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
100	KT 69/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
101	KT 12/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	TIDAK MENGGUNAKAN RSW
102	KT 328/F	SIONG ANN TRAWLER SDN.BHD	P.UDANG	TIDAK MENGGUNAKAN RSW
103	KT 442/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
104	KT 808/F	SIONG ANN TRAWLER SDN.BHD	P.IKAN	MENGGUNAKAN RSW
105	KT 896/F	CHANG MOOK SHOI CHANG MOOK SHUI	P.IKAN	TIDAK MENGGUNAKAN RSW
106	SN 212/4F	WANG KAM SHING	P.UDANG	TIDAK MENGGUNAKAN RSW
107	KT 78/F	CHONG CHIUN LEONG	P.IKAN	TIDAK MENGGUNAKAN RSW
108	KT 1480/F	BAHARUDDIN BIN SOON SANG	P.UDANG	TIDAK MENGGUNAKAN RSW
109	KT 229/F	NEW SOON HOOK LIONG SOON FOOK	P.UDANG	TIDAK MENGGUNAKAN RSW
110	KT 1288/F	CHONG CHEE WAI	P.UDANG	TIDAK MENGGUNAKAN RSW
111	KT 1688/F	NG SYN YEE	P.IKAN	TIDAK MENGGUNAKAN RSW
112	SN 1688/F	LIONG SOO HA	P.IKAN	TIDAK MENGGUNAKAN RSW
113	SKD 00012/F	FOOK SOON SEAFOOD PRODUCT SDN BHD	P.IKAN	MENGGUNAKAN RSW
	RSW	Refrigerator system water (Sistem Penyejukan		

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
		Air)		
	P. Ikan	Pukat Tunda Ikan	51 buah	
	P. Udang	Pukat Tunda Udang	62 buah	

**Appendix 1B.** The full list of Sabah DOF-registered trawlers in Sandakan (source: Sabah Department of Fisheries, Sandakan Office, 2010).

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
1	LD-80/4F	Rappe Kado	Pukat tunda (311)	
2	SN 618/4F	Fong Khi Fah	Pukat tunda (311)	
3	SN 5095/F	Syt. Tian Li Trading	Pukat tunda (311)	
4	SSK 00218F	Syt. Tian Li Trading	Pukat tunda (311)	
5	SN 5357/4	Mal Bonsai	Pukat tunda (311)	
6	SN 5395/4F	Salbiah Bt. Maulani	Pukat tunda (311)	
7	SN 2883/4F	Lo Koon Fook	Pukat tunda (311)	
8	TB 348/4F	Salmah Bt. Baki	Pukat tunda (311)	
9	SN 4568/4F	Hj. Kangkong Mappa	Pukat tunda (311)	
10	SN 5348/4F	Fanawangi Iyan	Pukat tunda (311)	
11	SN 6536/4F	Fung Yok Ching	Pukat tunda (311)	
12	LG 876/F	Sabarudin B. Undot	Pukat tunda (312)	
13	LG 184/4F	Amrus Zakaria	Pukat tunda (312)	
14	SN 1360/4F	Mazni B. Assi	Pukat tunda (311)	
15	SN 1674/4F	Tung Hai Fishing Sdn. Bhd.	Pukat tunda (311)	
16	SN 1704/4(F)	Ahmad B. Yassin	Pukat tunda (311)	
17	SN 2889/4F	Ng Kwan Sang	Pukat tunda (312)	
18	SN 379/4F	Mohd. Alpa B. Kassim	Pukat tunda (311)	
19	SN 2500/F	Voo Fook Ming	Pukat tunda (311)	
20	SN 4819/4F	Haji Ismail B. Hj. Ahmad	Pukat tunda (311)	
21	SN 4196/4F	Atcher Timbang	Pukat tunda (311)	
22	SN 5830/4F	Ting Sia Kat	Pukat tunda (311)	
23	SN 515/4F	Lu Su Ring	Pukat tunda (311)	
24	SN 366/4F	Chong Nyuk Hung	Pukat tunda (311)	
25	SN 2181/4F	Ng Khe Nyen	Pukat tunda (311)	
26	SN 345/4F	Hai Feng Enterprise	Pukat tunda (311)	
27	SN 2230/4F	Hai Feng Enterprise	Pukat tunda (311)	
28	SN 262/4F	Alliuddin B. Kudus	Pukat tunda (311)	
29	SN 5035/4F	Muderang Bt. Haide	Pukat tunda (311)	
30	BN 891/4F	Chin Vui Wing	Pukat tunda (312)	
31	SN 5998/4F	Arhali B. Daluz	Pukat tunda (311)	
32	SN 6530/4F	Usman B. Musa	Pukat tunda (311)	
33	SN 5238/4F	Rajah Ali B. Alaha	Pukat tunda (311)	
34	SN 2890/4F	Masni B. Omar	Pukat tunda (311)	
35	BN 838/4F	Voo Min Shing	Pukat tunda (312)	
36	SN 4992/4F	Chong Chung Kee	Pukat tunda (311)	
37	TB 731/4F	Hj. Omar Hasseng	Pukat tunda (311)	

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
38	LG 598/4F	Asnawi B. Man	Pukat tunda (311)	
39	LG 363/4F	Kadri B. Abu Bakar	Pukat tunda (311)	
40	Bn 918/4F	Chung Tet Vui	Pukat tunda (312)	
41	BN 348/4F	Chung Chung Kee	Pukat tunda (311)	
42	SN 92/4F	Ang Ying Kiong	Pukat tunda (311)	
43	SN 1001/4F	Syt. Lian Lee	Pukat tunda (311)	
44	SN 5344/4F	Sumrawa B. Bacho	Pukat tunda (311)	
45	LG 384/4F	Sahebe Tamba	Pukat tunda (311)	
46	SN 478/4F	Kwek Shee Liang@Kwek Szu Liang	Pukat tunda (311)	
47	BN 333/4F	Fung Yok Ching	Pukat tunda (312)	
48	SN 998/4F	Kok Zoo Yong	Pukat tunda (312)	
49	SN 5336/4F	Wing Fatt Cold Storage	Pukat tunda (311)	
50	SN 1087/4F	Ku Bersaudara	Pukat tunda (311)	
51	SN 5986/4F	Khoo Bun Leng	Pukat tunda (311)	
52	SN 2728/4F	Ku Bersaudara	Pukat tunda (312)	
53	SN 120/4F	Ku Bersaudara	Pukat tunda (311)	
54	SN 5297/4F	Noren Mohd. Unson	Pukat tunda (311)	
55	SN 6520/4F	Pabau B. Musa	Pukat tunda (311)	
56	SN 1009/4F	Hj. Kangkong Mappa	Pukat tunda (311)	
57	SN 72/4F	Chiang Man Mai	Pukat tunda (311)	
58	SN 6220/4F	Assin Aliamat	Pukat tunda (311)	
59	TB 567/4F	North Borneo Fishing Co.	Pukat tunda (311)	
60	SN 5855/4F	Sapari B. Kiming	Pukat tunda (312)	
61	SN 889/4F	Lee Nyuk Tong	Pukat tunda (311)	
62	TS 20/4F	North Borneo Fishing Co.	Pukat tunda (311)	
63	SN 1552/4F	Syt. Tian Li Trading	Pukat tunda (311)	
64	SN 777/4F	Syt. Tian Li Trading	Pukat tunda (311)	
65	SN 89/4F	Chong Yee Loi	Pukat tunda (311)	
66	SN 2839/4F	Chung Chung Kee	Pukat tunda (312)	
67	SN 68/4F	Chang Mun Wai	Pukat tunda (311)	
68	SN 444/4F	Matusin Myasin	Pukat tunda (311)	
69	LG 473/4F	Chau Shan Chong@Chau Siew Chong	Pukat tunda (311)	
70	SN 6231/4F	Chung Tet Vui	Pukat tunda (311)	
71	SN 389/4F	Ng Kwan Sang	Pukat tunda (311)	
72	BN 388/4F	Voo Min Shing	Pukat tunda (312)	
73	BN 237/4F	Abd. Rahim B. Diar	Pukat tunda (311)	
74	SN 1338/4F	Chow Siew Ming	Pukat tunda (311)	
75	SN 4726/4F	Wong Cho Sap	Pukat tunda (311)	
76	SN 652/4F	Syt. Foh Hing Trading	Pukat tunda (311)	
77	SN 605/4F	Ibrahim@Baraliang B. Kassan	Pukat tunda (311)	
78	TB 351/4F	Wong Cho Sap	Pukat tunda (311)	

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
79	SN 497/4F	Wong Hee Wah	Pukat tunda (311)	
80	SN 145/F	Wong Cho Sap	Pukat tunda (311)	
81	SN 1122/4F	Wong Wai Kong	Pukat tunda (311)	
82	SN 979/4F	Wong Cho Sap	Pukat tunda (311)	
83	SN 1628/4F	Sheak Kam Fat	Pukat tunda (311)	
84	SN 5830/4F	Hj. Ambo B. Mohamad	Pukat tunda (311)	
85	SN 6488/4F	Lajim B. Sumadin	Pukat tunda (312)	
86	SN 588/4F	Ng Khe Nyen	Pukat tunda (311)	
87	SN 652/4F	Lee Nyuk Tong	Pukat tunda (311)	
88	SN 1374/4F	Lim Bon Hoi	Pukat tunda (311)	
89	SN 595/4F	Leung Koon Yau	Pukat tunda (311)	
90	SN 6205/4F	Asmat Sabudin	Pukat tunda (311)	
91	LG 526/4F	Ahat Oto	Pukat tunda (311)	
92	LG 442/4F	Gani B. Muji	Pukat tunda (311)	
93	SN 2538/4F	Ng Kong Min	Pukat tunda (311)	
94	SN 6638/4F	Yong Tet Kong	Pukat tunda (312)	
95	SN 666/4F	Liew Nyuk Fah	Pukat tunda (311)	
96	SN 91/4F	Wong Teck Hai	Pukat tunda (311)	
97	BN 788/4F	Sim Fook Shing	Pukat tunda (312)	
98	BN 178/4F	Sim Fook Shing	Pukat tunda (312)	
99	BN 689/4F	Wong Tshun Kit	Pukat tunda (312)	
100	LG 423/4F	Basung Matta	Pukat tunda (311)	
101	SN 1058/4F	Hai Feng Enterprise	Pukat tunda (311)	
102	SN 4810/4F	Wong Hee Ping	Pukat tunda (311)	
103	SN 6563/4F	Tan Kin Swan	Pukat tunda (311)	
104	SN 6775/4F	Chan Ngan Fook	Pukat tunda (311)	
105	LG 433/4F	Yaakob B. Dartin	Pukat tunda (311)	
106	SN 4504/4F	Chee Kay Kiam	Pukat tunda (311)	
107	SN 6064/4F	Samiun Anui	Pukat tunda (311)	
108	SN 6548/4F	Lim Ken Khui	Pukat tunda (311)	
109	SN 3683/4F	Ocean Spring Enterprise	Pukat tunda (312)	
110	SN 6607/4F	Liew Nyuk Pin	Pukat tunda (311)	
111	SN 6686/4F	Kok Zoo Yong	Pukat tunda (311)	
112	LG 219/4F	Adannan B. Madun	Pukat tunda (311)	
113	LG 404/4F	Sirman Dullah	Pukat tunda (311)	
114	SN 6231/4F	Ng Koon Wah	Pukat tunda (311)	
115	SN 3639/4F	Hai Feng Enterprise	Pukat tunda (311)	
116	SN 6299/4F	Chong Kian Kwok	Pukat tunda (311)	
117	SN 498/4F	Wong Hee Ping	Pukat tunda (311)	
118	SN 1906/4F	Sheak Yih Nai	Pukat tunda (311)	
119	SN 831/4F	Wong Hee Wah	Pukat tunda (311)	

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
I20	SN 4508/4F	Duraman Omar Ali	Pukat tunda (311)	
I21	SN 305/4F	Tang Ka Hung	Pukat tunda (311)	
I22	SN 4396/4F	Quek Joo Seng	Pukat tunda (311)	
I23	SN 4423/4F	Umpa B. Lakku	Pukat tunda (311)	
I24	TB 648/4F	Chin Git Chong	Pukat tunda (311)	
I25	SN 4842/4F	Iting B. Mua	Pukat tunda (311)	
I26	SN 6222/4F	Liew Nyuk Fah	Pukat tunda (311)	
I27	SN 2102/F	Chin Git Chong	Pukat tunda (311)	
I28	TT 107/F	Chin Git Chong	Pukat tunda (311)	
I29	TT 68/F	Chin Git Chong	Pukat tunda (311)	
I30	LG 731/4F	Abdullah Pangga	Pukat tunda (311)	
I31	SN 592/4F	Nicholas Chung Kuo Hsien	Pukat tunda (311)	
I32	SN 6715/4F	Nicholas Chung Kuo Hsien	Pukat tunda (311)	
I33	SN 587/4F	Ho Heng Seng@Ho Kau	Pukat tunda (311)	
I34	LG 58/4F	Masali B. Anang	Pukat tunda (311)	
I35	SN 1681/4F	Moong B. Teyong	Pukat tunda (311)	
I36	SN 1416/4F	Goodview Sea Products	Pukat tunda (311)	
I37	LG 672/4F	Lahari B. Dahlan	Pukat tunda (311)	
I38	SN 228/4F	Chong Nyuk Hung	Pukat tunda (311)	
I39	SN 909/4F	Chong Nyuk Hung	Pukat tunda (311)	
I40	SN 3689/4F	Liew Vui Moi	Pukat tunda (312)	
I41	SN 6636/4F	Liew Koi Moi	Pukat tunda (311)	
I42	SN 6612/4F	Liew Ket Fui	Pukat tunda (311)	
I43	BN 913/4F	Ku Bersaudara	Pukat tunda (311)	
I44	SN 977/4F	Tung Hai Fishing Sdn. Bhd.	Pukat tunda (311)	
I45	SN 4742/4F	Yamin Daris	Pukat tunda (311)	
I46	SN 4667/4F	Japri B. Lele	Pukat tunda (311)	
I47	SN 6262/4F	Razail Samuddin	Pukat tunda (311)	
I48	LG 318/4F	Masirin B. Badarung	Pukat tunda (311)	
I49	SN 5021/4F	Hassim B. Abd. Hari	Pukat tunda (311)	
I50	SN 1227/4F	Perniagaan Leong	Pukat tunda (311)	
I51	SN 993/4F	Chang Sui Seong	Pukat tunda (311)	
I52	SN 1891/4F	Palak Omar	Pukat tunda (311)	
I53	SN 5306/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
I54	SN 4797/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
I55	SN 3238/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
I56	TB 576/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
I57	SN 6127/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
I58	SN 6048/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
I59	SN 382/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
I60	SN 4493/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
161	SN 515/4F	Mardan B. Julkanain	Pukat tunda (311)	
162	SN 2927/4F	Sitti Noraini Bt. Hussin	Pukat tunda (312)	
163	SN 1214/4F	Lahiya Bt. Latip	Pukat tunda (311)	
164	SN 5840/4F	Chai Yun Sang	Pukat tunda (311)	
165	LG 166/4F	Lumi Dahali	Pukat tunda (311)	
166	SN 3898/4F	Khoo Sok Noi	Pukat tunda (311)	
167	SN 3228/4F	Khoo Kheng Siang	Pukat tunda (311)	
168	SN 3929/4F	Basrin B. Ara	Pukat tunda (311)	
169	SN 620/4F	Hj. Arasid B. Mohd. Yassin	Pukat tunda (311)	
170	SN 6436/4F	Liew Koi Moi	Pukat tunda (311)	
171	SN 81/4F	Lee Nyuk Tong	Pukat tunda (311)	
172	SN 4792/4F	Tung Hai Fishing Sdn. Bhd. & Quek Chik Shie	Pukat tunda (311)	
173	SN 2848/F	Tan Kin Swan	Pukat tunda (311)	
174	SN 6397/F	Liew Nyuk Fah	Pukat tunda (311)	
175	SN 1248/4F	Siti Hanie Hj.Kangkong	Pukat tunda (311)	
176	LG 515/F	Merdu Mewah Sdn. Bhd.	Pukat tunda (312)	
177	LG 516/F	Merdu Mewah Sdn. Bhd.	Pukat tunda (312)	
178	LG 517/F	Merdu Mewah Sdn. Bhd.	Pukat tunda (312)	
179	LG 518/F	Merdu Mewah Sdn. Bhd.	Pukat tunda (312)	
180	SN 1188/4F	Syt. Lian Lee	Pukat tunda (312)	
181	SN 3968/4F	Syt. Lian Lee	Pukat tunda (311)	
182	SN 4779/4F	Majja Makka	Pukat tunda (311)	
183	SN 6598/4F	Tan Hang Sang	Pukat tunda (311)	
184	SN 1845/4F	Lu Thien Min	Pukat tunda (311)	
185	SN 6469/F	Foo Nyuk Ying	Pukat tunda (311)	
186	KN 14/4F	Japar Hasing	Pukat tunda (311)	
187	SN 6059/4F	Tang Yen Ling	Pukat tunda (311)	
188	SN 6563/4F	Lee Siew Len	Pukat tunda (311)	
189	SN 6434/4F	Tam Lluk Ning@Tam Vui Ming	Pukat tunda (311)	
190	TB 777/4F	Maznah Bt. Abdillah	Pukat tunda (311)	
191	SN 5096/4F	Tong Yun Fong & Voo Fook Ming	Pukat tunda (311)	
192	KT 781/4F	Dahlan Campu	Pukat tunda (311)	
193	SN 6221/4F	Saidin Elan	Pukat tunda (311)	
194	SN 6061/4F	Wong Tshun Ket	Pukat tunda (311)	
195	SN 6908/4F	Kwek Lee Siang	Pukat tunda (311)	
196	SN 6602/4F	Arasid B. Mohd Yassin	Pukat tunda (311)	
197	SN 6055/4F	Hj. Kangkong Mappa	Pukat tunda (311)	
198	SN 4536/4F	Mohd. Alpa B. Hj. Kassim	Pukat tunda (311)	
199	SN 5999/4F	Nathasia Jain Kassim	Pukat tunda (311)	
200	SN 1877/4F	Chung Tet Vui & Lee Chee Kiong	Pukat tunda (311)	

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
201	SN 2881/4F	Osman Mansur	Pukat tunda (311)	
202	SN 2556/4F	Wee Pei Chu@Ivy Wee	Pukat tunda (312)	
203	SN 6204/4F	Asis Kuntana	Pukat tunda (311)	
204	SN 1750/4F	Karim Mappé	Pukat tunda (311)	
205	SN 2498/4F	Chee Kay Kiam	Pukat tunda (311)	
206	SN 707/4F	Khoo Bun Leng	Pukat tunda (311)	
207	SSK 00313/F	Syt. Yin Heng (c/o Widegrowth Marine Resources)	Pukat tunda (312)	
208	SSK 00311/F	T.K. Enterprise (c/o Widegrowth Marine Resources)	Pukat tunda (312)	
209	SN 1603/4F	Ahmad Masri	Pukat tunda (311)	
210	SN 6630/4F	Goodview Sea Products	Pukat tunda (311)	
211	SN 6168/4F	Goodview Sea Products	Pukat tunda (311)	
212	SN 6043/4F	Ting Soo Buat@Robert Ting	Pukat tunda (311)	
213	SN 6623/4F	Sukiman B. Ismail	Pukat tunda (311)	
214	SN 78/4F	Goodview Sea Products	Pukat tunda (311)	
215	SN 2398/4F	John Wong Su Kiong	Pukat tunda (311)	
216	SN 332/4F	John Wong Su Kiong	Pukat tunda (311)	
217	SN 6588/4F	Kamdun B. Hajar	Pukat tunda (311)	
218	SN 5951/4F	Hj. Lele B. Tahir	Pukat tunda (311)	
219	SN 6512/4F	Lahiya Bt. Latip	Pukat tunda (311)	
220	BN 633/F	Voo Chiew Yun	Pukat tunda (312)	
221	BN 668/F	Tsen Mui Yun	Pukat tunda (312)	
222	SN 3855/4F	Efendi B. Anuar	Pukat tunda (311)	
223	SN 468/4F	Kaddu Beduasan	Pukat tunda (311)	
224	SN 6813/4F	Kong Pau Leong	Pukat tunda (312)	
225	SN 5827/4F	Harris B. Omar	Pukat tunda (311)	
226	SN 6082/4F	Misnawati Bt. Berahima	Pukat tunda (311)	
227	SN 5800/4F	Abd. Hafid B. Saeling	Pukat tunda (311)	
228	SN 822/4F	Chong Nyuk Hung	Pukat tunda (311)	
229	TB 675/4F	Adam B. Jidah	Pukat tunda (311)	
230	SN 6503/4F	Lajim B. Sumadin	Pukat tunda (311)	
231	SN 2731/4F	Chow Siew Ming	Pukat tunda (312)	
232	SN 5868/4F	Sabri Aras	Pukat tunda (311)	
233	LG 623/4F	Jumati Bt. Lawali	Pukat tunda (311)	
234	TN 635/4F	Sulong B. Mappah	Pukat tunda (311)	
235	SN 2818/4F	Kwek Lee Siang	Pukat tunda (312)	
236	SN 3621/4F	Karim B. Hussin	Pukat tunda (311)	
237	BN 868/4F	Wee Pei Chu@Ivy Wee	Pukat tunda (312)	
238	SN 1937/F	Saidin Elan	Pukat tunda (311)	
239	BN 833/4F	Heng Dek Sen	Pukat tunda (311)	

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
240	SN 2265/4F	Mohayaran Bt. Bisman	Pukat tunda (311)	
241	BN 350/4F	Liew Nyuk Fah	Pukat tunda (311)	
242	LG 427/4F	Sahidal Salleh	Pukat tunda (311)	
243	SN 4955/4F	Omar Latip	Pukat tunda (312)	
244	SN 3666/4F	Lo Kwai Seng	Pukat tunda (311)	
245	SN 1497/4F	Chong Nyuk Hung	Pukat tunda (311)	
246	SN 5867/4F	Lasalasia B. Ambutua	Pukat tunda (311)	
247	BN 238/4F	Lim Set Yung	Pukat tunda (311)	
248	SSK 000299F	Wing Fatt Cold Storage	Pukat tunda (312)	
249	SSK 00298F	Wing Fatt Cold Storage	Pukat tunda (312)	
250	SN 4935/4F	Abd. Gani Said	Pukat tunda (311)	
251	SN 6833/4F	Kwek Lee Siang	Pukat tunda (311)	
252	Tn 697/4F	Manja Mansur	Pukat tunda (311)	
253	SN 3807/4F	Atcher Timbang	Pukat tunda (311)	
254	SN 2565/4F	Yong Tet Kong	Pukat tunda (311)	
255	LG 821/F	Nasrun Badarin	Pukat tunda (312)	
256	SN 740/F	Moyong Aminuddin	Pukat tunda (311)	
257	TS 79/4F	Voo Fook Ming@Voo Ming Fook	Pukat tunda (311)	
258	TS 112/4F	Jamil Mappasere	Pukat tunda (311)	
259	SN 6668/4F	Chiang Man Fai	Pukat tunda (311)	
260	SN 429/4F	Pan Yang Kung	Pukat tunda (311)	
261	SN 4704/F	Bedu Haling B. Malla	Pukat tunda (311)	
262	LG 820/F	Yusof B. Badarun	Pukat tunda (312)	
263	KT 297/4F	Jakaria@Anyki B. Maruji	Pukat tunda (311)	
264	SN 6543/4F	Halimah Bin	Pukat tunda (311)	
265	SN 6770/F	Su Lick Ing	Pukat tunda (311)	
266	SN 1828/4F	Siti Noraini Bt. Hussin	Pukat tunda (312)	
267	LG 208/4F	Julani B. Osman	Pukat tunda (311)	
268	SN 3278/4F	Chong Chung Kee	Pukat tunda (311)	
269	SN 1873/4F	Chong Chung Kee	Pukat tunda (311)	
270	SN 3398/4F	D.K. Wong	Pukat tunda (312)	
271	SN 4560/F	Ng Koon Wah@Ng Koon Poh	Pukat tunda (311)	
272	SN 2538/4F	Siong Ann Trawler Sdn. Bhd.	Pukat tunda (311)	
273	BN 898/F	Fung Yok Ching	Pukat tunda (312)	
274	SN 1217/4F	Jamin Karimudin	Pukat tunda (311)	
275	SN 336/4F	Chin Ah Yit@Chin Nyuk Min	Pukat tunda (311)	
276	SN 4490/4F	Kambar Montol	Pukat tunda (311)	
277	BN 868/4F	Udanika Enterprise	Pukat tunda (312)	
278	SN 6288/4F	Wong Hee Wah	Pukat tunda (311)	
279	SN 259/4F	Ng Kim Chew	Pukat tunda (311)	
280	SN 6452/4F	Abdullah Demdeng	Pukat tunda (311)	

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
281	SN 5888/4F	Ko Nelayan Sabah	Pukat tunda (311)	
282	SN 6043/4F	Wong Gek Yee	Pukat tunda (311)	
283	SN 2808/F	Khoo Bun Leng	Pukat tunda (311)	
284	SN 6045/4F	Perikanan Zmgsa Jaya	Pukat tunda (311)	
285	SN 2038/4F	Chung Kuo Hsien	Pukat tunda (311)	
286	SN 5073/4F	Lasalasia B. Ambutua	Pukat tunda (311)	
287	SN 347/4F	Kaddu Beduasan	Pukat tunda (311)	
288	TT 73/4F	Salmah Bt. Baki	Pukat tunda (311)	
289	SN 5358/4F	Hj. Abd. Samat B. Hj. Ahmad	Pukat tunda (311)	
290	SN 5370/4F	North Borneo Fishing Co.	Pukat tunda (311)	
291	SN 5989/4F	Chang Shui Ping	Pukat tunda (311)	
292	LG 147/4F	Ambomai Patta	Pukat tunda (311)	
293	SN 4886/4F	Abd. Latip B. Zainal	Pukat tunda (311)	
294	SN 4979/4F	Abd. Rasid B. Adun	Pukat tunda (311)	
295	SN 1891/4F	Khoo Kiam Lam	Pukat tunda (311)	
296	SN 4549/4F	Alimuddin B. Kadasse	Pukat tunda (311)	
297	SN 6567/4F	Tan Yong Ping	Pukat tunda (311)	
298	SN 5933/4F	Tan Hang Seng	Pukat tunda (311)	
299	SN 6766/4F	Tan Hang Seng	Pukat tunda (311)	
300	SN 838/4F	Tan Hang Seng	Pukat tunda (311)	
301	SN 402/F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
302	SN 170/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
303	SN 598/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
304	SN 812/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
305	SN 4414/4F	Chee Yin Cheong	Pukat tunda (311)	
306	SN 585/4F	Ungas B. Siaban	Pukat tunda (311)	
307	SN 4901/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
308	SN 4963/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
309	SN 718/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
310	SN 5957/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	
311	SN 6355/4F	Ulka B. Tambang	Pukat tunda (311)	
312	SN 1115/4F	Khoo Thau Yon	Pukat tunda (311)	
313	BN 331/4F	Wong Chun Shing	Pukat tunda (312)	
314	BN 933/4F	Wong Tsun Kit & Wong Chin Sang	Pukat tunda (312)	
315	BN 399/4F	Tan Kin Swan	Pukat tunda (312)	
316	SN 4853/4F	Assi B. Yaisin	Pukat tunda (311)	
317	SN 6086/4F	Voo Fook Ming	Pukat tunda (311)	
318	SN 5295/4F	North Borneo Fishing Co.	Pukat tunda (311)	
319	KT 1564/4F	Hussen B. Pautong	Pukat tunda (311)	
320	LG 713/4F	Abdullah Bachok	Pukat tunda (311)	
321	SN 5842/4F	Sabah Sea Produce Sdn. Bhd.	Pukat tunda (311)	

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
322	SN 6343/4F	Noh B. Omar	Pukat tunda (311)	
323	SN 5964/4F	Lau B. Basir	Pukat tunda (311)	
324	SN 68/4F	Chin Nyuk Son	Pukat tunda (311)	
325	SN 2203/4F	Siaw Sei Leong	Pukat tunda (311)	
326	SN 1371/4F	Chin Kyun Yin	Pukat tunda (311)	
327	SN 5805/F	Kolapis Marine Product Co.	Pukat tunda (311)	
328	BN 220/4F	Angkasa (S) Sdn. Bhd. (Syt. Hap Seng)	Pukat tunda (311)	
329	BN 234/4F	Widegrowth Marine Product	Pukat tunda (311)	
330	BN 628/4F	Kwan Pong Enterprise	Pukat tunda (312)	
331	SN 6005/4F	Sukar Bardan	Pukat tunda (311)	
332	SN 964/4F	Nasip Trading	Pukat tunda (311)	
333	TB 637/4F	Saide Muhammadin	Pukat tunda (311)	
334	SN 119/4F	Lu Thai Fook	Pukat tunda (311)	
335	SN 5847/4F	Rahman B. Mahmud	Pukat tunda (311)	

**Appendix 2A.** The full list of Sabah DOF-registered purse seiners in Kudat/Banggi area (source: Sabah Department of Fisheries, Kudat Office, 2010).

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN
1	KT 39/F	CHANG MOOK SHUI CHANG MOOK SHOI	PUKAT JERUT	TIDAK MENGGUNAKAN RSW
2	KT 829/F	SIONG ANN TRAWLER SDN. BHD	PUKAT JERUT	„
3	KT 969/F	CHEN SUK KYUN	PUKAT JERUT	„
4	KT929/F	SIONG ANN TRAWLER SDN. BHD	PUKAT JERUT	„
5	KT 3699/F	CHONG CHI KONG	PUKAT JERUT	„
6	KT 2/F	FOOK SOON SEAFOOD PRODUCT SDN. BHD	PUKAT JERUT	„
7	KT 50/F	CHONG CHI KONG	PUKAT JERUT	„
8	KT 3988/F	TAY KIM SING TAY KAI SING	PUKAT JERUT	„
9	KT 4389/F	CHONG CHI KONG	PUKAT JERUT	„
10	KT 2353 F	CHONG CHI KONG	PUKAT JERUT	„
11	KT 81/F	LEE CHIN ANN	PUKAT JERUT	„
12	KT 188/F	LEE CHIN ANN	PUKAT JERUT	„
13	KT 7/F	FOOK SOON SEAFOOD PRODUCT SDN. BHD	PUKAT JERUT	„
14	KT 16/F	FOOK SOON SEAFOOD PRODUCT SDN. BHD	PUKAT JERUT	„
15	SN 323/F	CHANG MOOK SHUI CHANG MOOK SHOI	PUKAT JERUT	„
16	JN 3669/F	TAY NYUK KHEN	PUKAT JERUT	„
17	KT 6638/F	PERNIAGAAN YAU SHING	PUKAT JERUT	„
18	SKD 00057/F	MARINA CHUNG NG	PUKAT JERUT	„

**Appendix 2B.** The full list of Sabah DOF-registered purse seiners in Sandakan (source: Sabah Department of Fisheries, Sandakan Office, 2010).

BIL	No Kapal	NAMA PEMILIK SYARIKAT	JENIS PERALATAN TANGKAP	CATATAN (GRT)
1	SSK 00298/4F	Wing Fatt Cold Storage	PUKAT JERUT	39.78
2	SSK 00299/4F	Wing Fatt Cold Storage		39.78
3	MV 324939/F	Syarikat Fan and Brothers		91
4	SSK 00119/4F	Syarikat Fan and Brothers		125.14
5	BN A303/4F	Reapropect Sdn Bhd		31.38
6	SSK 00442F	Serbia Binti Hairak		39.27
7	BN 668/4F	Tsen Mui Yun		39.39
8	SN 1988/4F	Wong Hee Wah		35.28
9	SSK 00263F	Wong Hee Seng		39.97
10	SN 3079/4F	Amansha Bin Atin		39.06
11	SBF 38	Jutaan Cita S/B		116.47
12	SBF 39	Jutaan Cita S/B		119.79

**Appendix 3A.** Raw data of the Annual Fisheries Statistics used (1995-2008)  
(digital copy in separate folder).

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# CORAL TRIANGLE INITIATIVE

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